

RCD-W50C

SERVICE MANUAL

Ver 1.1 2003. 12

US Model
Canadian Model
E Model

Self Diagnosis
Supported model



CD Section	Model Name Using Similar Mechanism	NEW
	CD Mechanism Type	CDM53L-30B61B
	Base Unit Type	BU-30BBD61B
	Optical Pick-up Type	A-MAX.3
CD-R/CD-RW Section	Model Name Using Similar Mechanism	NEW
	CD Mechanism Type	CDM65-RBD1
	Base Unit Type	RBD1
	Optical Pick-up Type	KRM-220CAA

SPECIFICATIONS

DECK A (the CD player section)

System Compact disc digital audio system
 Laser Semiconductor laser ($\lambda = 780$ nm)
 Emission duration: continuous
 Frequency response 20 Hz - 20,000 Hz (± 0.5 dB)

DECK B (the CD-R and CD-RW recording section)

System Compact disc digital audio system
 Laser Semiconductor laser ($\lambda = 780$ nm)
 Emission duration: continuous
 Playable discs CD, CD-R, CD-RW
 Recordable discs CD-R, CD-RW (for music use)
 Frequency response 20 Hz - 20,000 Hz (± 0.5 dB)

Inputs

ANALOG IN (Phono jacks)
 Impedance: 47 kilohms
 Rated input: 500 mVrms
 Minimum input 250 mVrms
 DIGITAL OPTICAL IN (Square optical connector jack)
 Optical wavelength: 660 nm

Outputs

ANALOG OUT (Phono jacks)
 Impedance: 47 kilohms
 Rated output: 2 Vrms
 Load impedance: over 10 kilohms
 DIGITAL OPTICAL OUT (Square optical connector jack)
 Wavelength: 660 nm
 Output level: -18 dBm
 PHONES (Phono jack)
 Load impedance: 32 ohms
 Output level: 12mW

General

Power requirements
 North American model: 120 V AC, 60 Hz
 Other models: 110-120/220-240V AC, 50/60 Hz
 Power consumption 25 W
 Dimensions (approx.) (w/h/d) incl. projecting parts and control 430 × 108 × 399 mm (17 × 4 3/8 × 15 3/4 inch)
 Mass (approx.) 6.8 kg (15 lbs)
 Supplied accessories
 • Audio connecting cords
 Phono jack × 2 (red/white) ↔ Phono jack × 2 (red/white) (2)
 • Remote commander (remote) (1)
 • Size AA (R6) batteries (2)

Design and specifications are subject to change without notice.

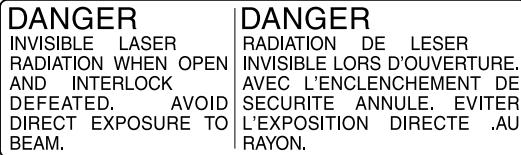
COMPACT DISC RECORDER

Laser component in this product is capable of emitting radiation exceeding the limit for Class 1.

CLASS 1 LASER PRODUCT
LUOKAN 1 LASERLAITE
KLASS 1 LASERAPPARAT

This appliance is classified as a CLASS 1 LASER product. The CLASS 1 LASER PRODUCT MARKING is located on the rear exterior.

The following caution label is located inside the apparatus.



CAUTION

Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

Notes on chip component replacement

- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

Flexible Circuit Board Repairing

- Keep the temperature of soldering iron around 270°C during repairing.
- Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
- Be careful not to apply force on the conductor when soldering or unsoldering.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer: Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microamperes). Leakage current can be measured by any one of three methods.

- A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
- A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
- Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2V AC range are suitable. (See Fig. A)

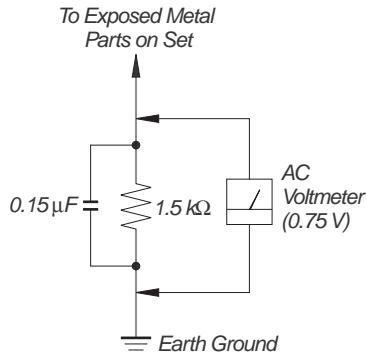
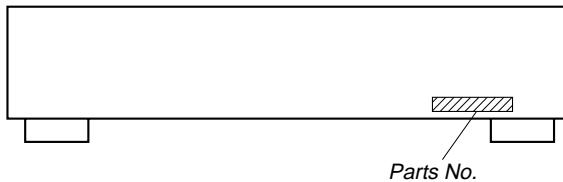


Fig. A. Using an AC voltmeter to check AC leakage.

MODEL IDENTIFICATION

— BACK PANEL —



PARTS No.	MODEL
4-238-401-0π	US
4-238-401-1π	Canadian
4-238-401-3π	E

TABLE OF CONTENTS

Unleaded solder

Boards requiring use of unleaded solder are printed with the lead-free mark (LF) indicating the solder contains no lead.

(Caution: Some printed circuit boards may not come printed with the lead free mark due to their particular size.)

**: LEAD FREE MARK**

Unleaded solder has the following characteristics.

- Unleaded solder melts at a temperature about 40°C higher than ordinary solder.
- Ordinary soldering irons can be used but the iron tip has to be applied to the solder joint for a slightly longer time.
- Soldering irons using a temperature regulator should be set to about 350°C.
- Caution: The printed pattern (copper foil) may peel away if the heated tip is applied for too long, so be careful!
- Strong viscosity
- Unleaded solder is more viscous (sticky, less prone to flow) than ordinary solder so use caution not to let solder bridges occur such as on IC pins, etc.
- Usable with ordinary solder
- It is best to use only unleaded solder but unleaded solder may also be added to ordinary solder.

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Self-diagnosis Function

When the self-diagnosis function is activated to prevent the player from malfunctioning, three character service numbers in a combination with a message appears in the display. In this case, check the following table.

Message	Explanation
C12/ Cannot Copy	<p>You are trying to record a disc that cannot be played back in DECK-A or with an external device, such as CD-ROM or VIDEO CD.</p> <ul style="list-style-type: none"> • Remove the disc, and then insert a music CD for playback.
C13/ Rec Error	<p>Recording has not been completed successfully because of vibration.</p> <ul style="list-style-type: none"> • Relocate the unit in a place free of vibration and restart the recording again. <p>The disc you try to record is excessively dirty (such as oil-stained or finger marked) or scratched. Or the disc is not normal.</p> <ul style="list-style-type: none"> • Replace the disc with another one and restart the recording again.
C14/ TOC Error	<p>The unit did not read the TOC information.</p> <ul style="list-style-type: none"> • Insert other discs.
C41/ Cannot Copy	<p>The sound source you are trying to record is a copy of a commercial music software. Or you are trying to record on a CD-R/CD-RW digitally.</p> <ul style="list-style-type: none"> • Because of the restriction of the Serial Copy Management System, you cannot record a copy of a commercial music software. Neither can you record a CD-R/CD-RW digitally.
C71/ Din Unlock	<p>If this message is displayed momentarily, this is not an error. It is caused by the digital signal during recording.</p> <p>During recording of a digital sound source, the connecting cable has been disconnected or the player of the sound source has turned off.</p> <ul style="list-style-type: none"> • Connect the cable or turn on the digital player.

NOTES ON HANDLING THE OPTICAL PICK-UP BLOCK OR BASE UNIT

The laser diode in the optical pick-up block may suffer electrostatic break-down because of the potential difference generated by the charged electrostatic load, etc. on clothing and the human body. During repair, pay attention to electrostatic break-down and also use the procedure in the printed matter which is included in the repair parts.

The flexible board is easily damaged and should be handled with care.

NOTES ON LASER DIODE EMISSION CHECK

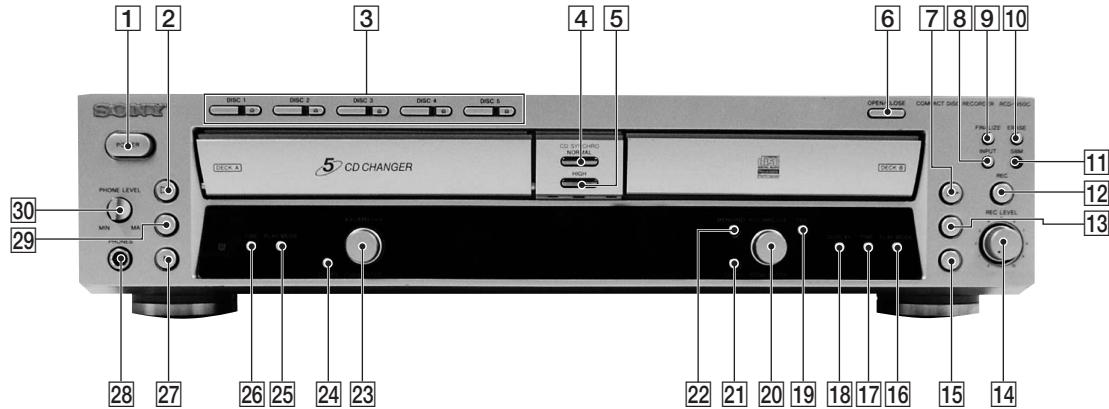
The laser beam on this model is concentrated so as to be focused on the disc reflective surface by the objective lens in the optical pick-up block. Therefore, when checking the laser diode emission, observe from more than 30 cm away from the objective lens. The emission check enables continuous checking of the S curve.

LASER DIODE AND FOCUS SEARCH OPERATION CHECK

Carry out the "S curve check" in "CD section adjustment" and check that the S curve waveform is output three times.

SECTION 2

GENERAL

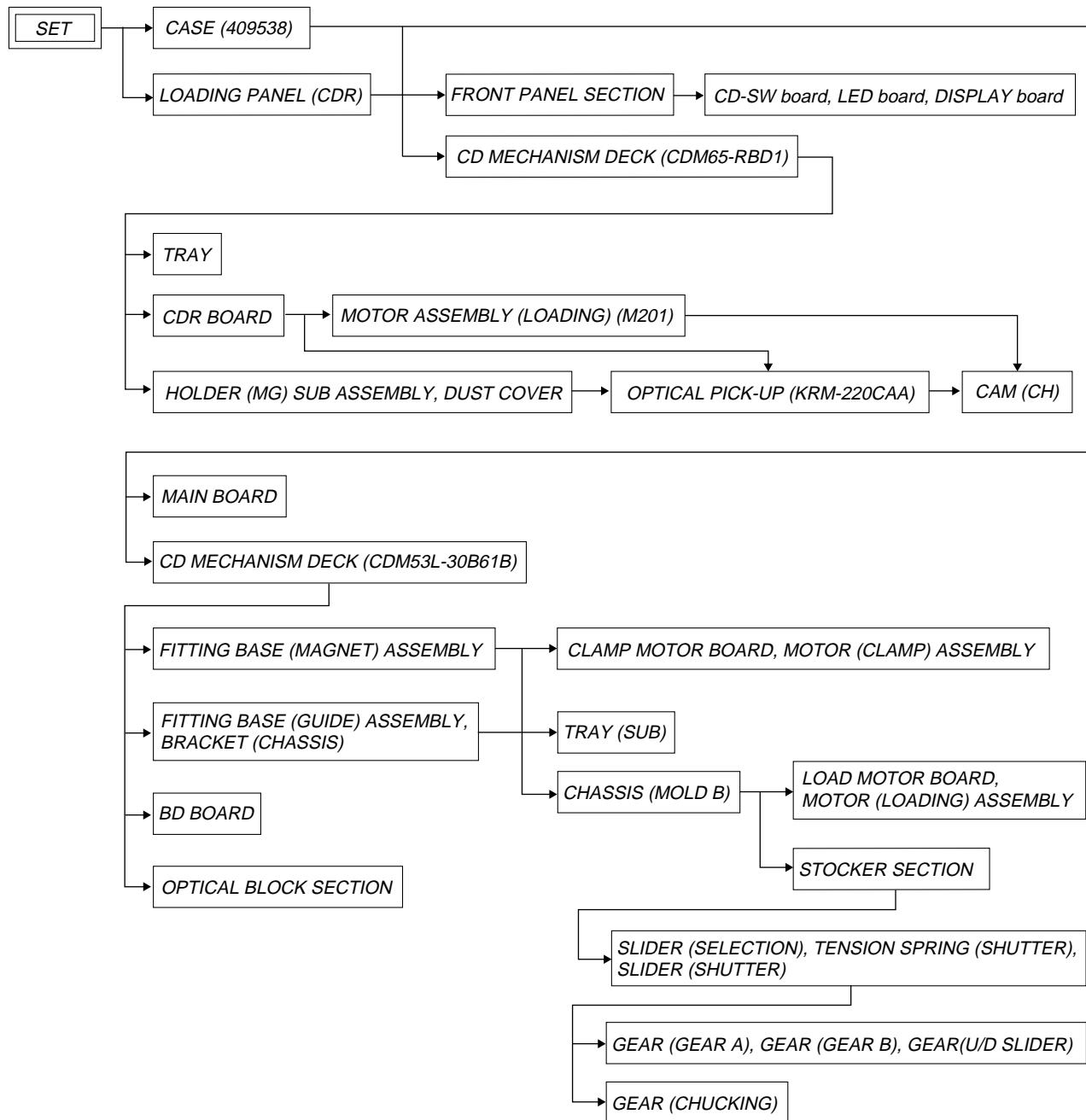


[1] POWER button	[16] PLAY MODE button
[2] ▶ button	[17] TIME button
[3] DISC 1 to DISC 5 ◄ button and indicators	[18] DISPLAY button
[4] CD SYNCHRO NORMAL button	[19] YES button
[5] CD SYNCHRO HIGH button	[20] ▲AMS ▼AMS knob
[6] OPEN/CLOSE ◄ button	[21] CLEAR button
[7] ▶ button	[22] MENU/NO button
[8] INPUT button	[23] ▲AMS ▼AMS knob
[9] FINALIZE button	[24] CLEAR button
[10] ERASE button	[25] PLAY MODE button
[11] SBM button and indicator	[26] TIME button
[12] REC ● button	[27] ■ button
[13] ■ button	[28] PHONES jack
[14] REC LEVEL knob	[29] ■ button
[15] ■ button	[30] PHONE LEVEL knob

SECTION 3

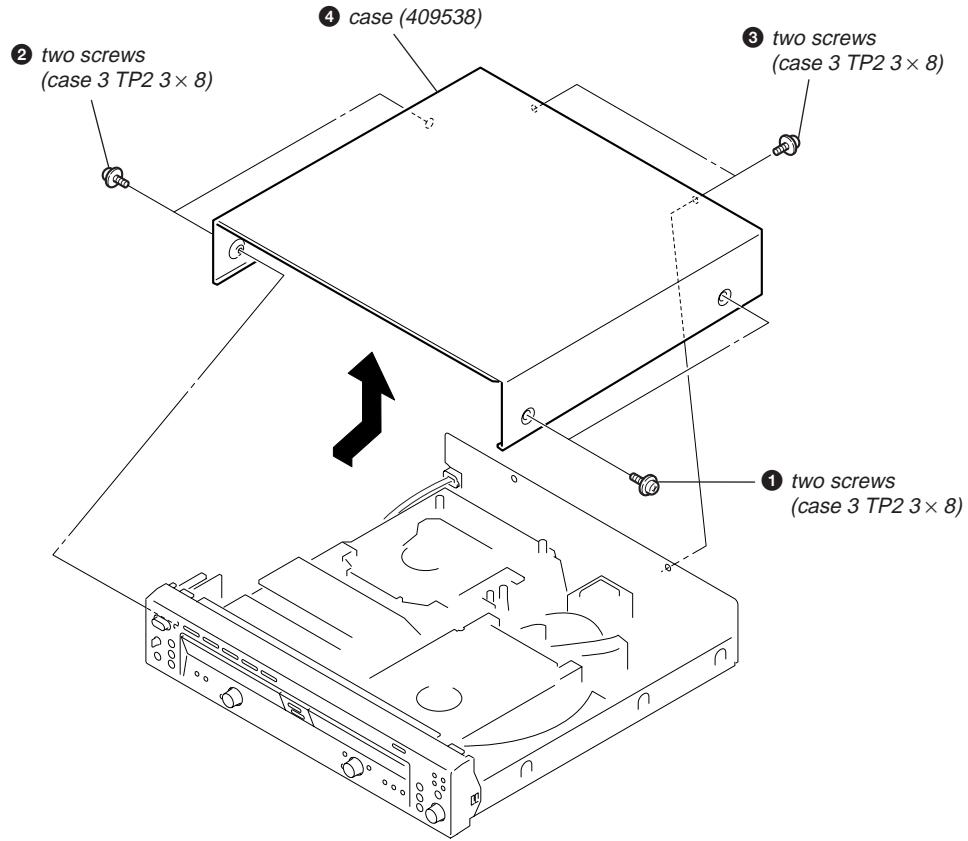
DISASSEMBLY

Note : Disassemble the unit in the order as shown below.

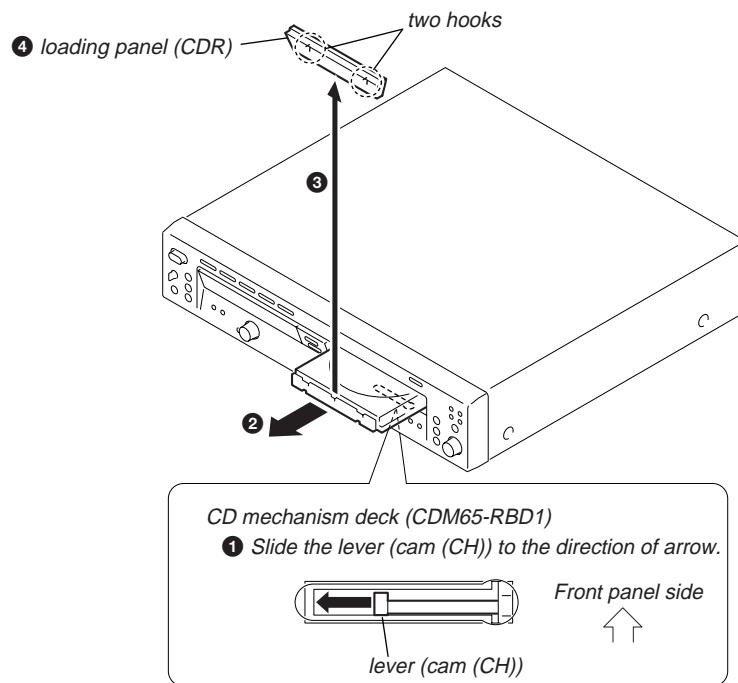


Note : Follow the disassembly procedure in the numerical order given.

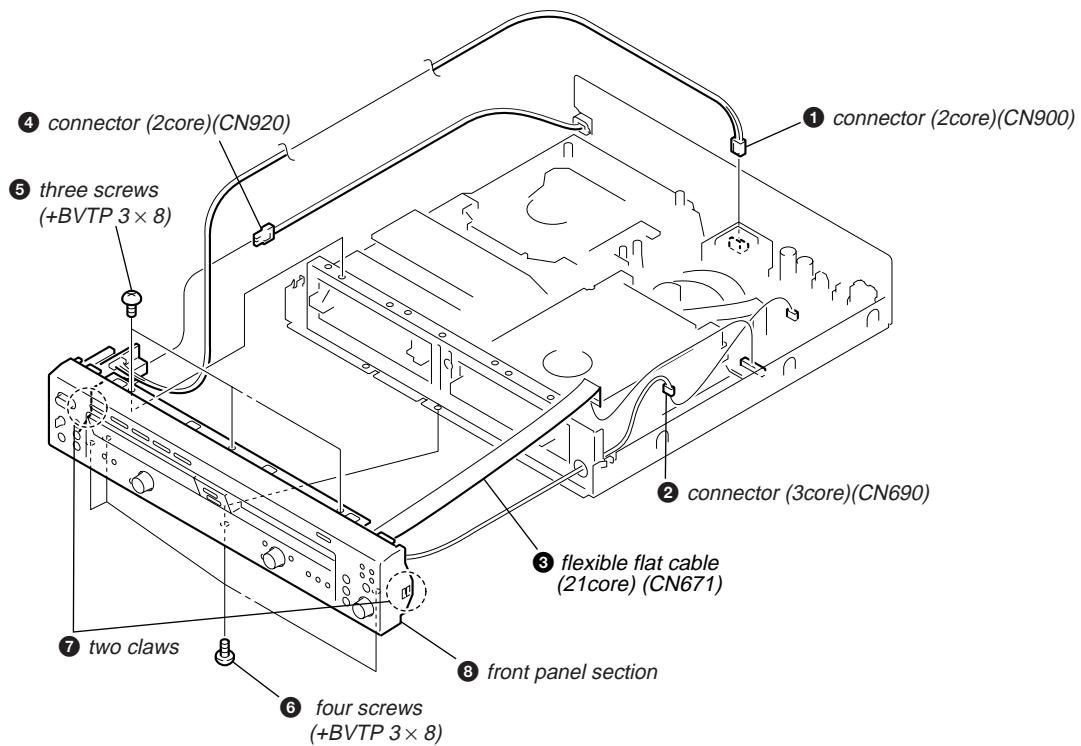
3-1. Case (409538)



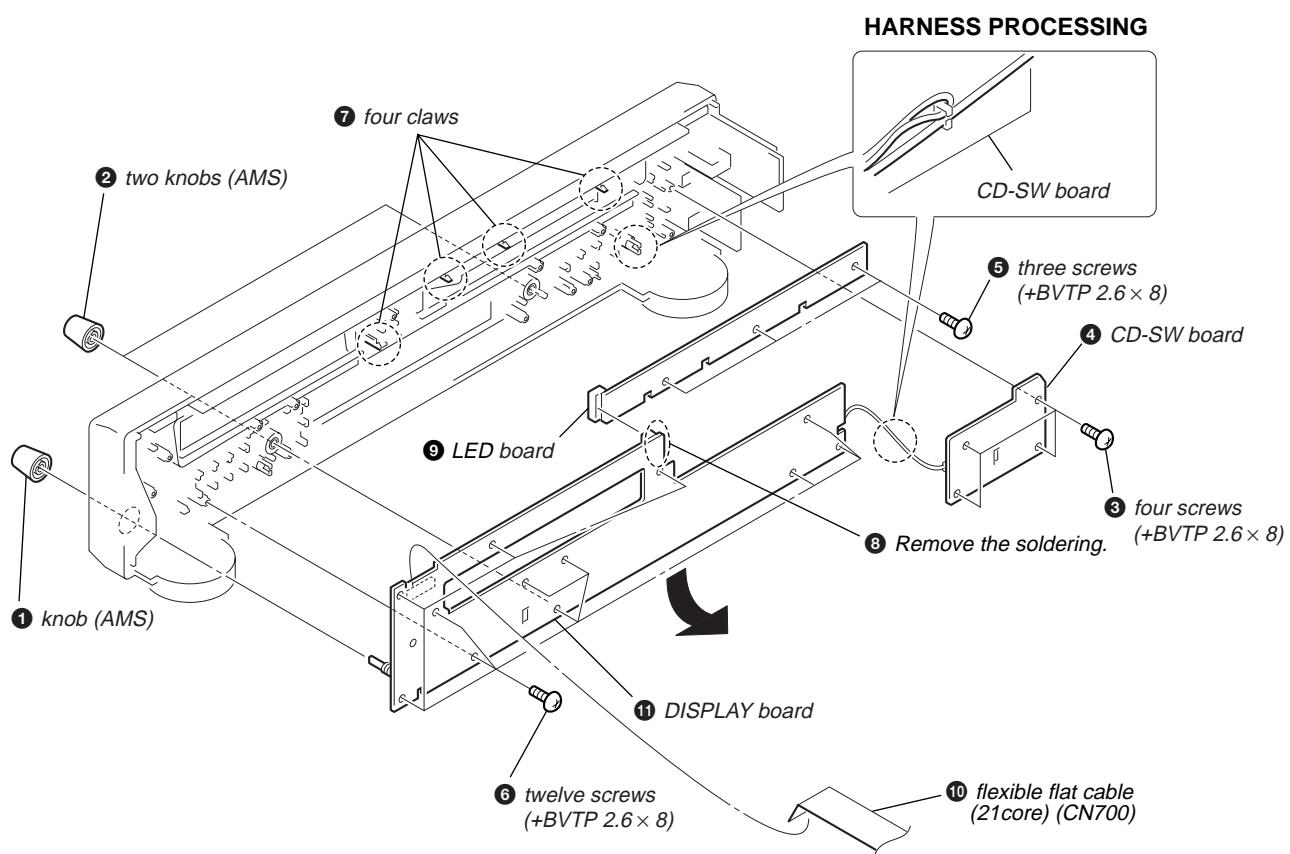
3-2. Loading Panel (CDR)



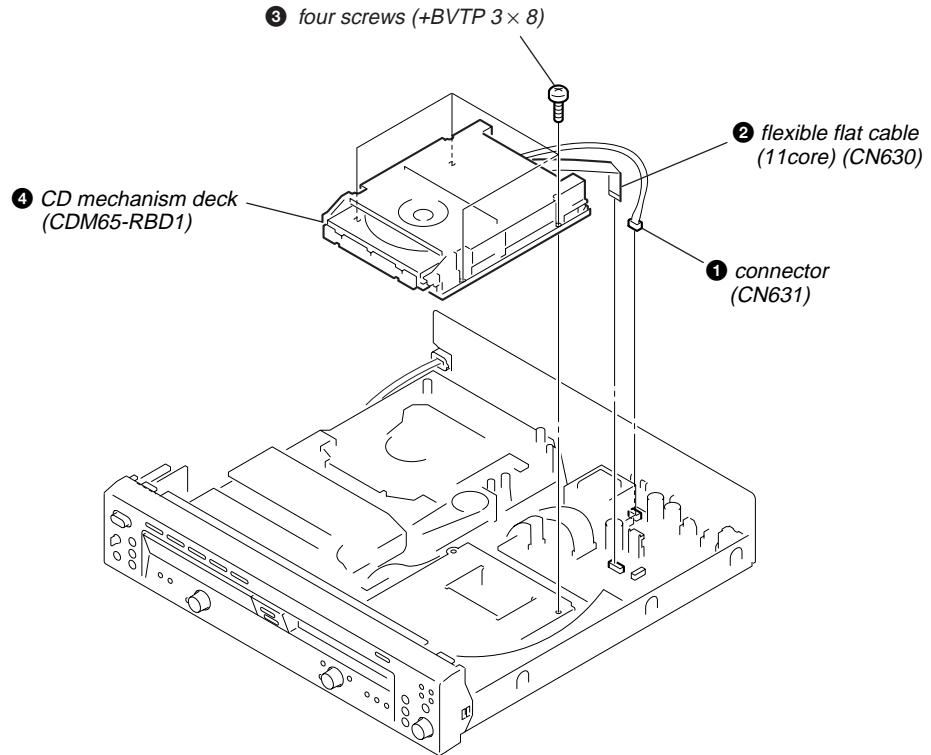
3-3. Front Panel Section



3-4. CD-SW Board, LED Board, DISPLAY Board

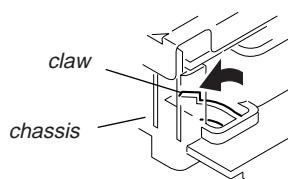


3-5. CD Mechanism Deck (CDM65-RBD1)

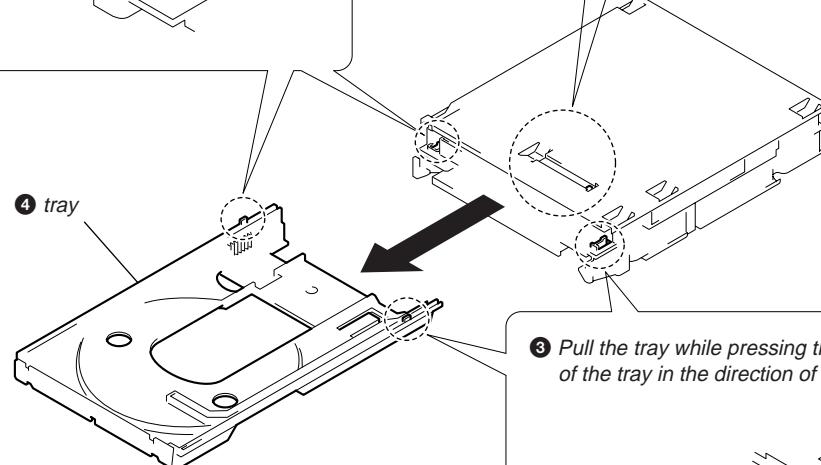


3-6. Tray

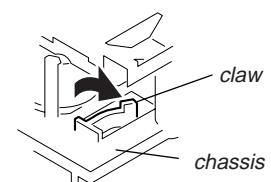
② Pull the tray while pressing the claw of the chassis in the direction of the arrow.



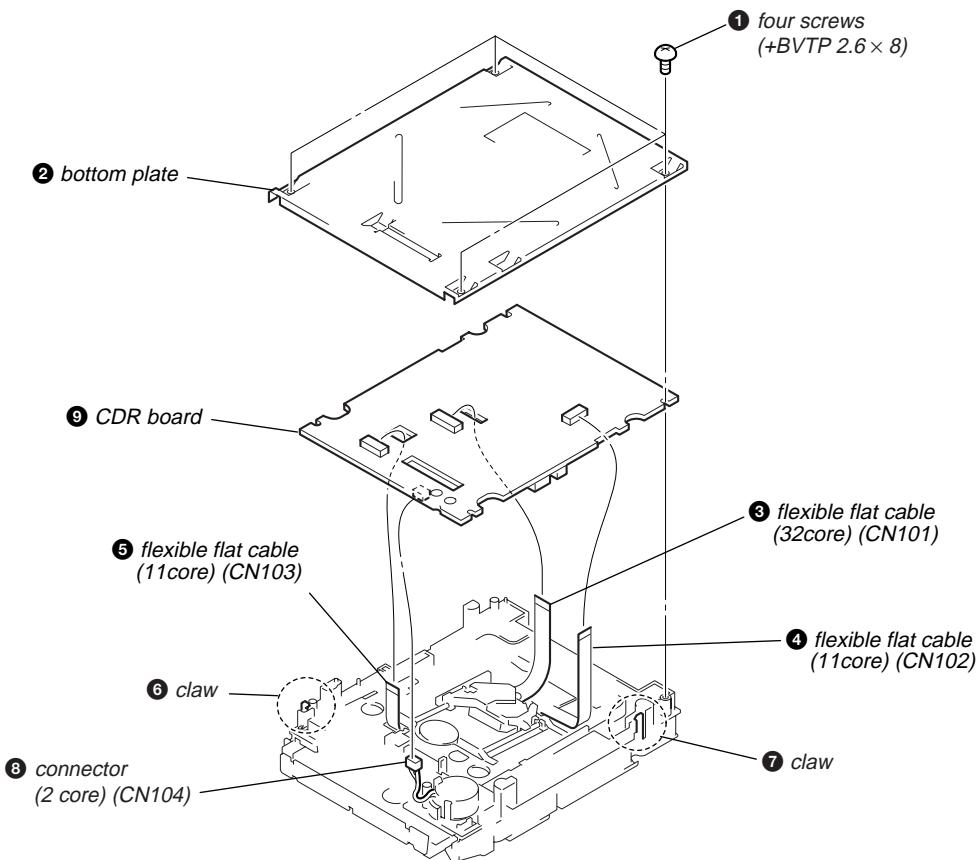
① Slide the lever (cam (CH)) to the direction of arrow.



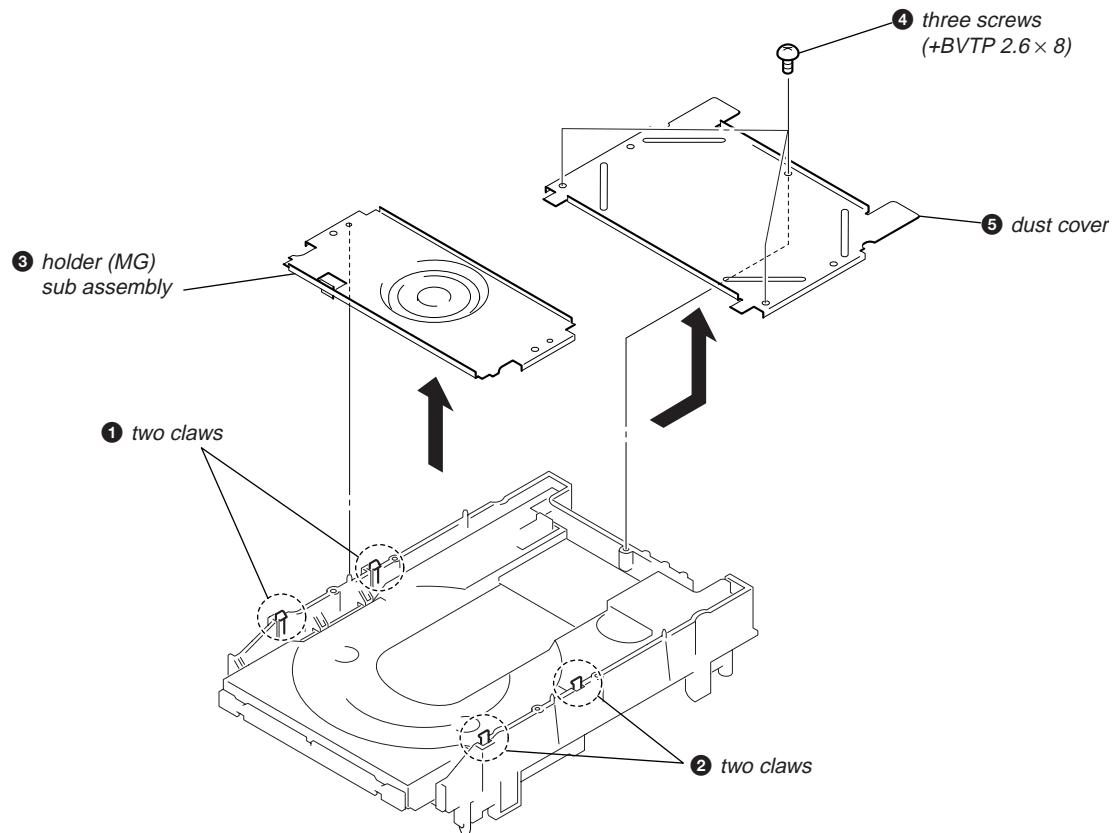
③ Pull the tray while pressing the claw of the chassis and the claw of the tray in the direction of the arrow.



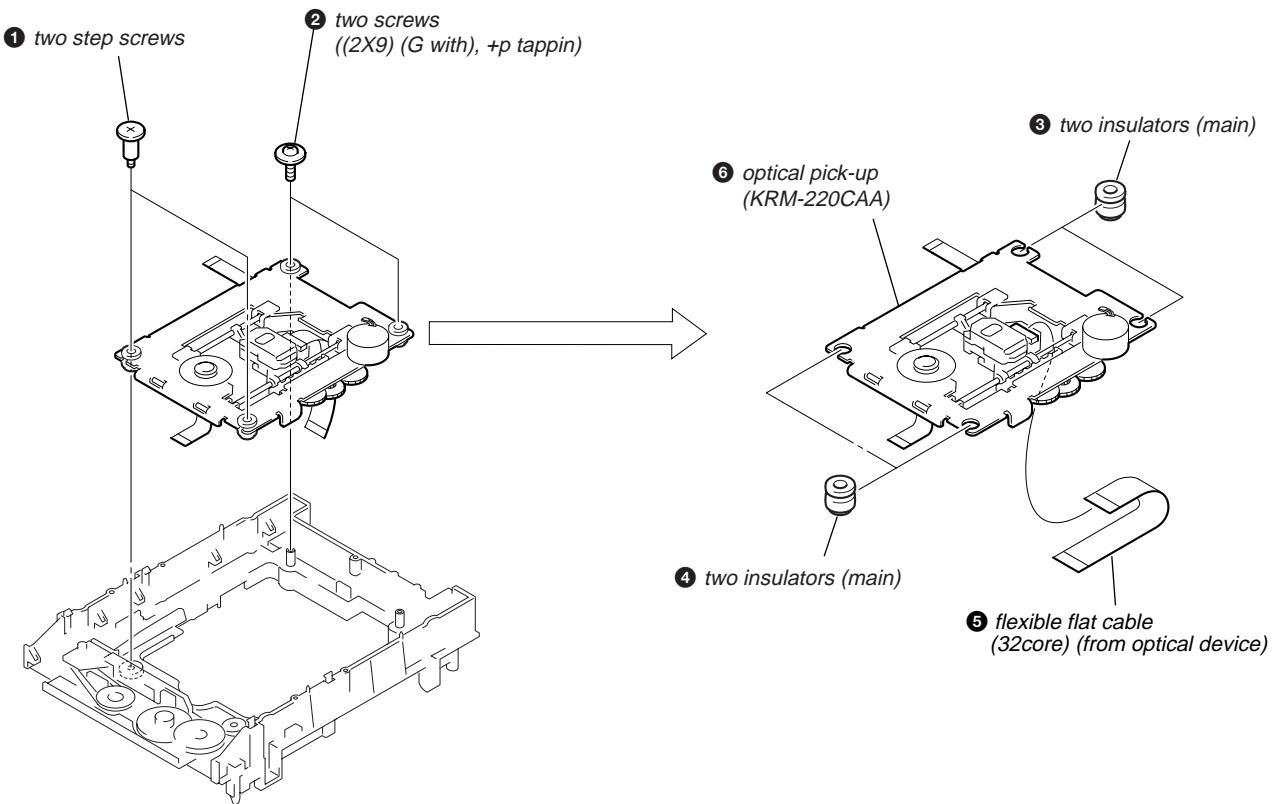
3-7. CDR Board



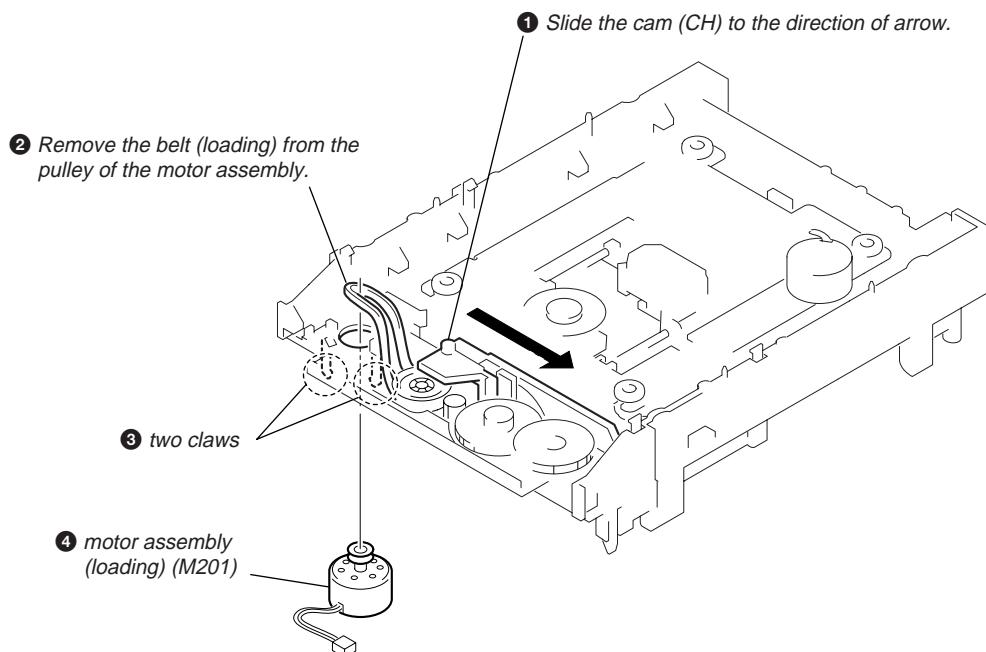
3-8. Holder (MG) Sub Assembly, Dust Cover



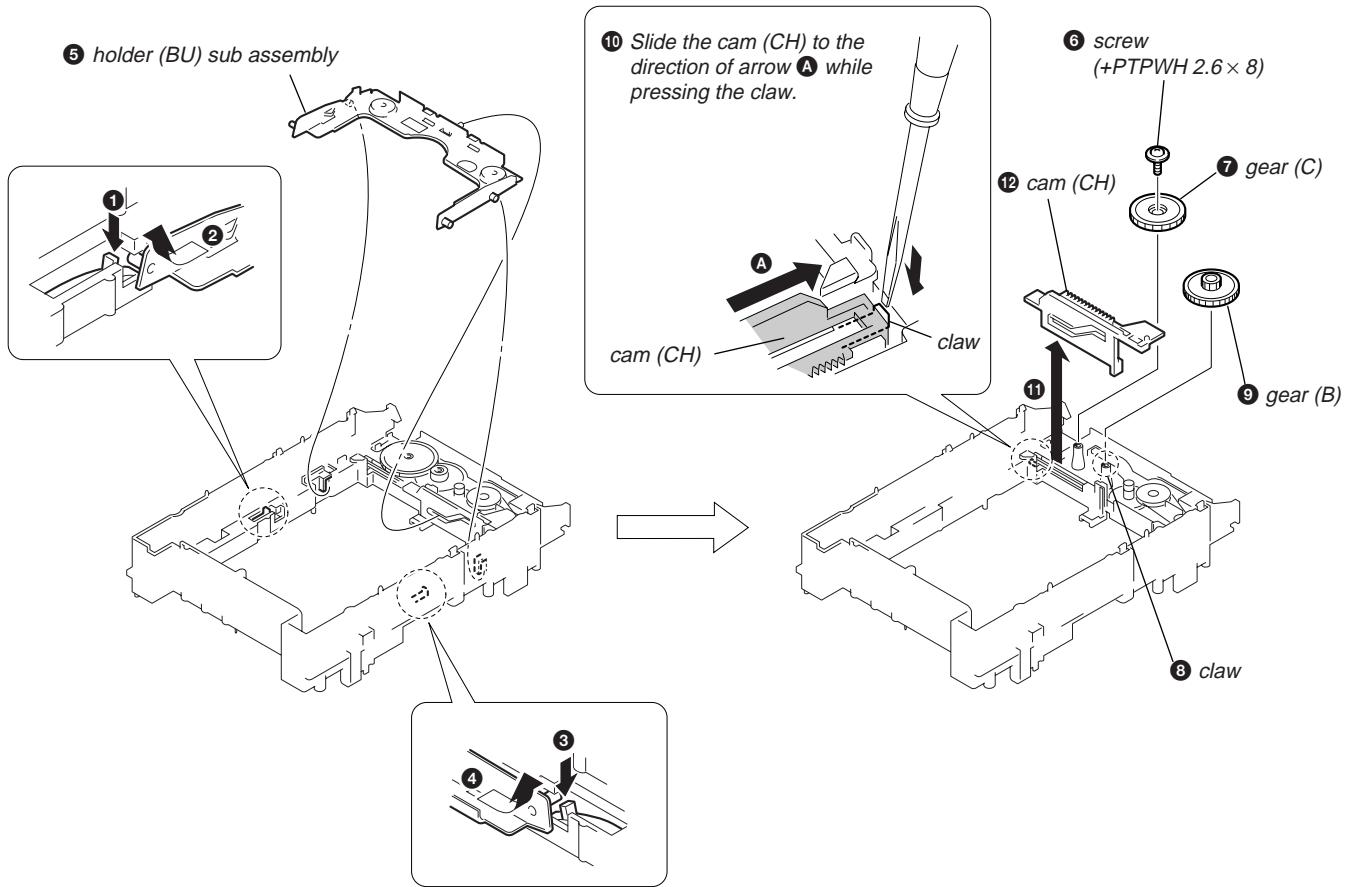
3-9. Optical Pick-Up (KRM-220CAA)



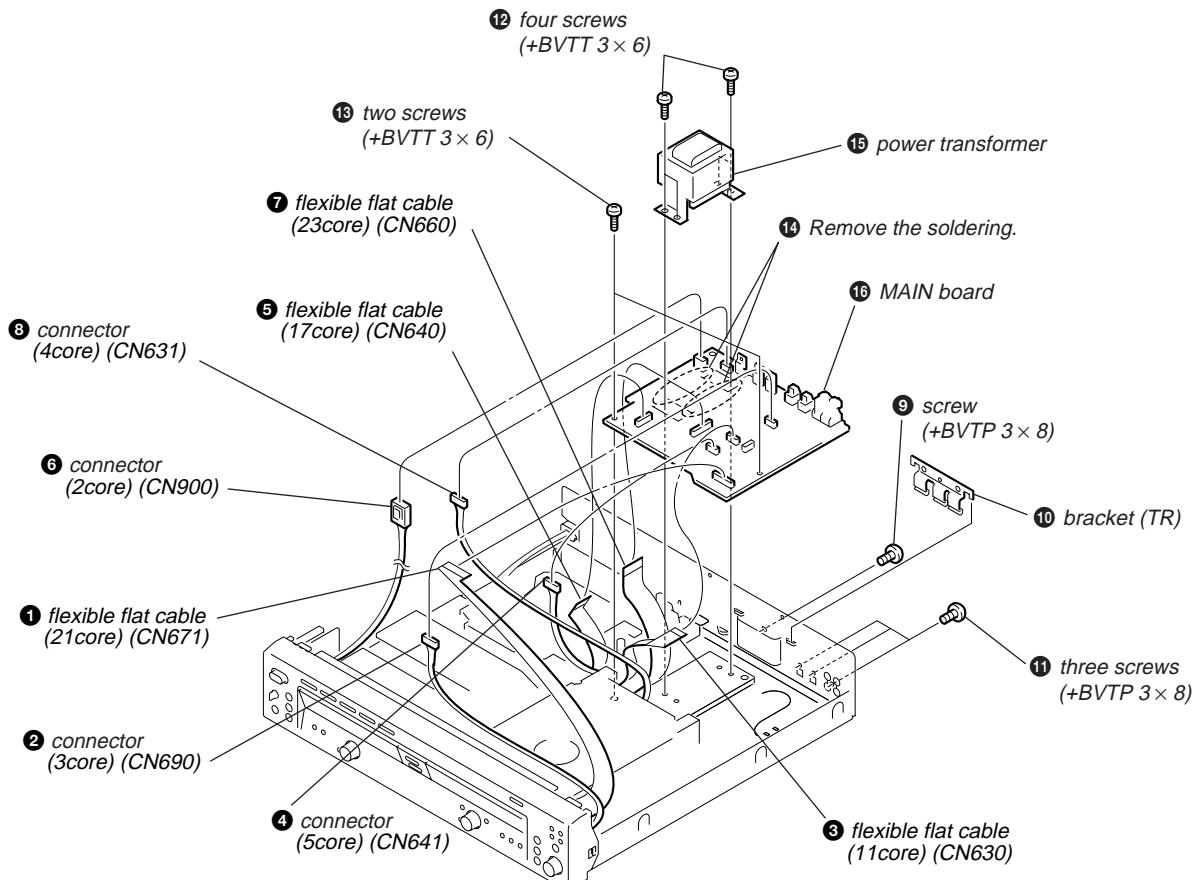
3-10. Motor Assembly (Loading) (M201)



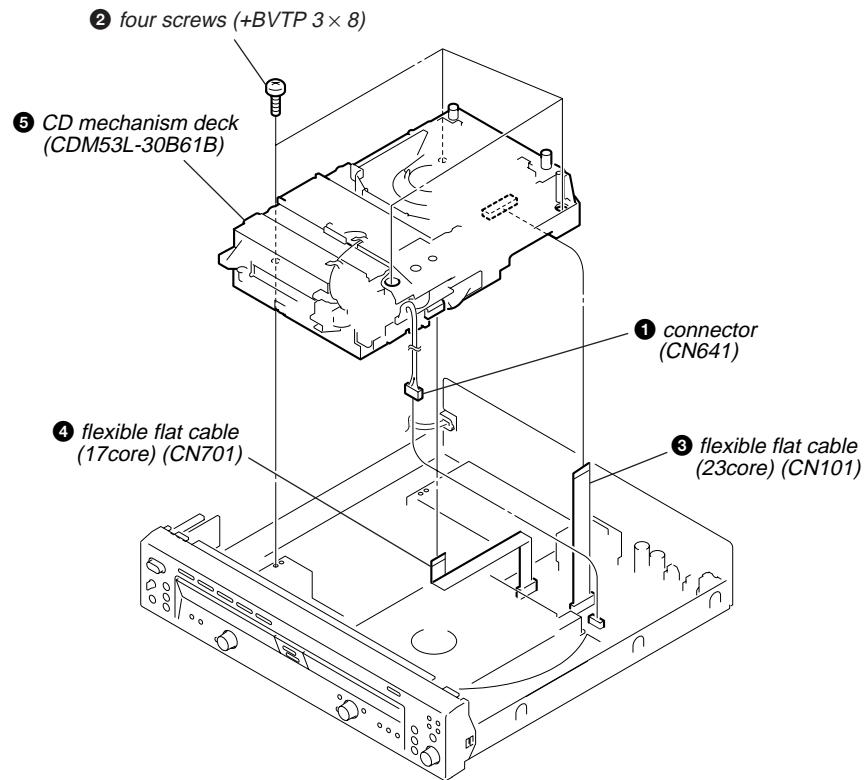
3-11. Cam (CH)



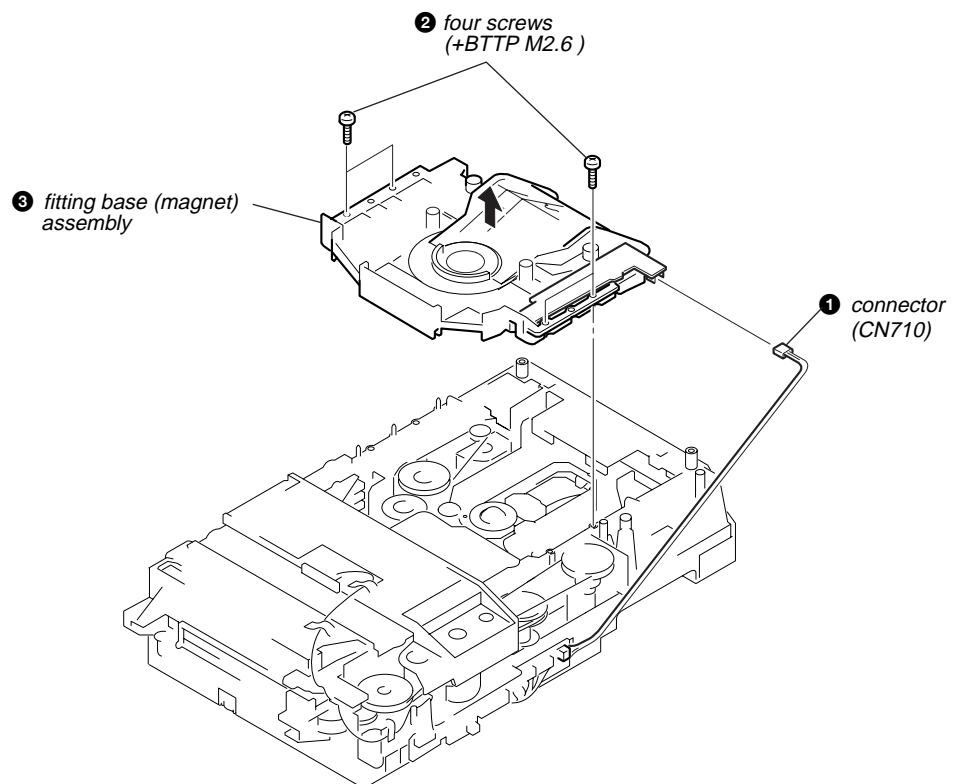
3-12. MAIN Board



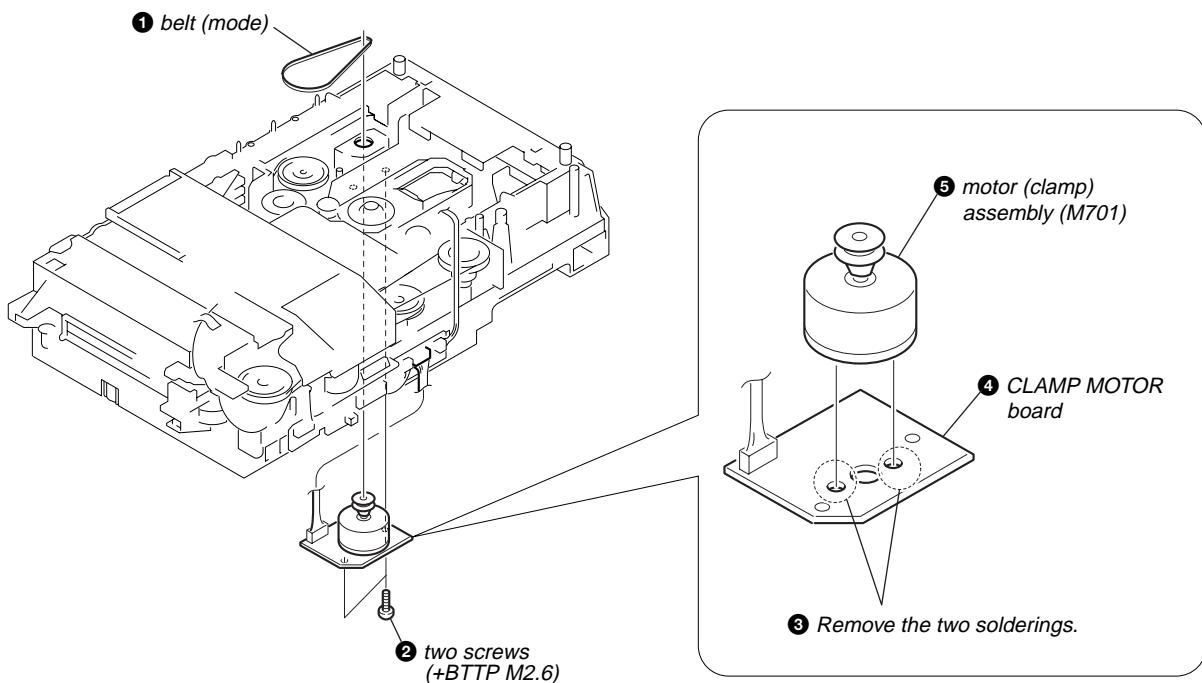
3-13. CD Mechanism Deck (CDM53L-30B61B)



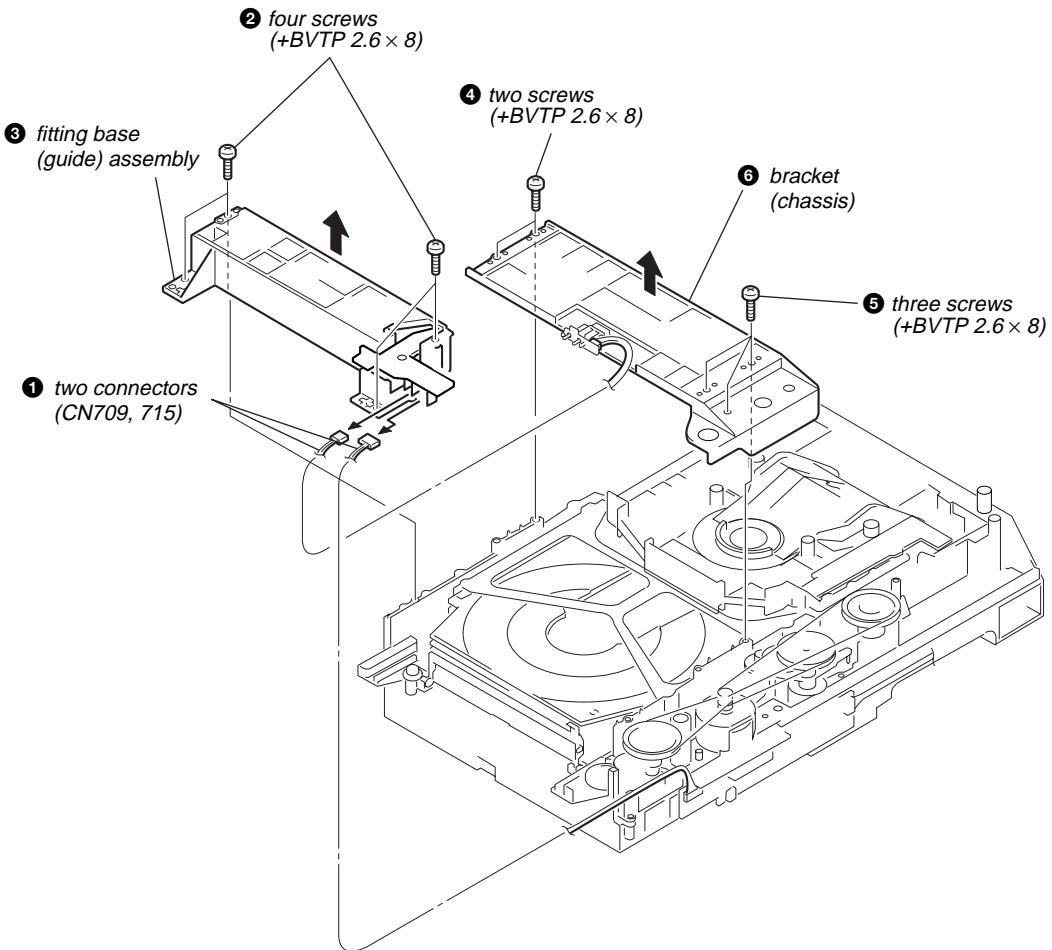
3-14. Fitting Base (Magnet) Assembly



3-15. CLAMP MOTOR Board, Motor (Clamp) Assembly (M701)

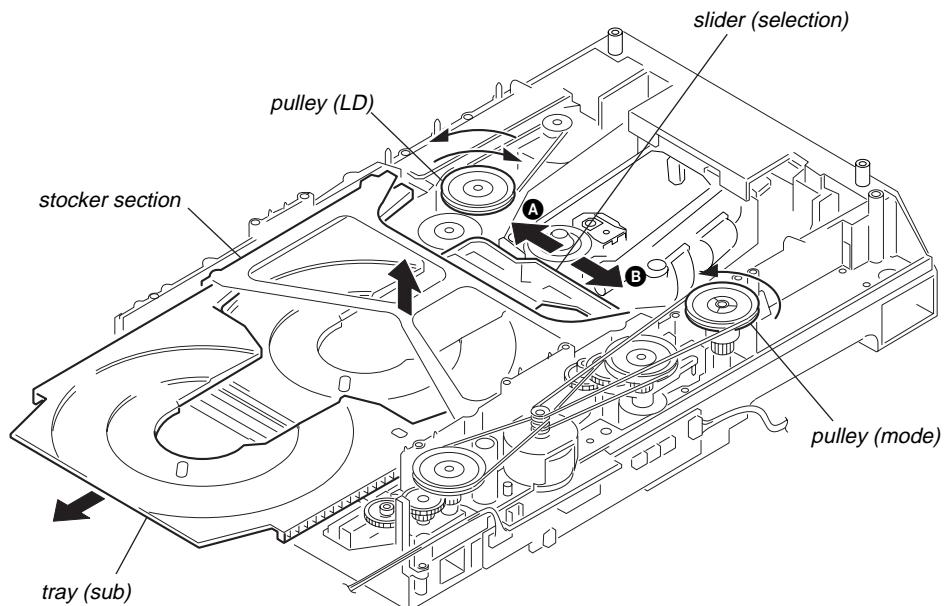


3-16. Fitting Base (Guide) Assembly, Bracket (Chassis)



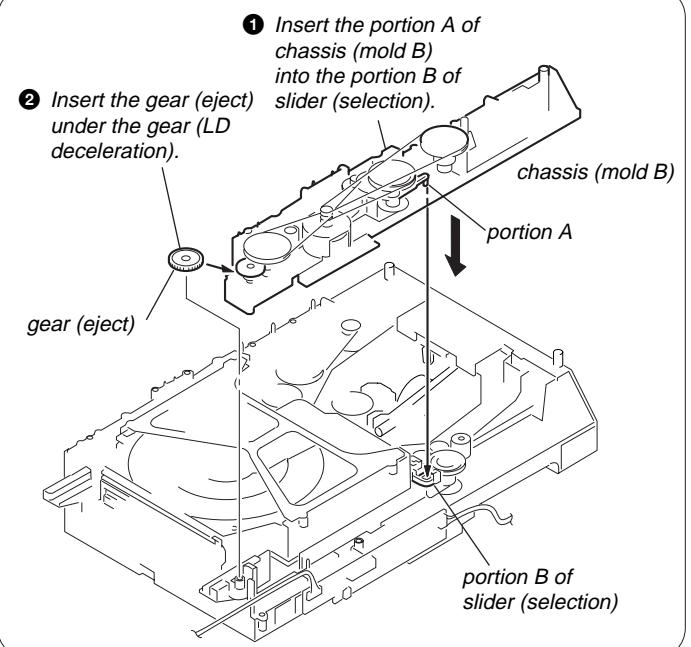
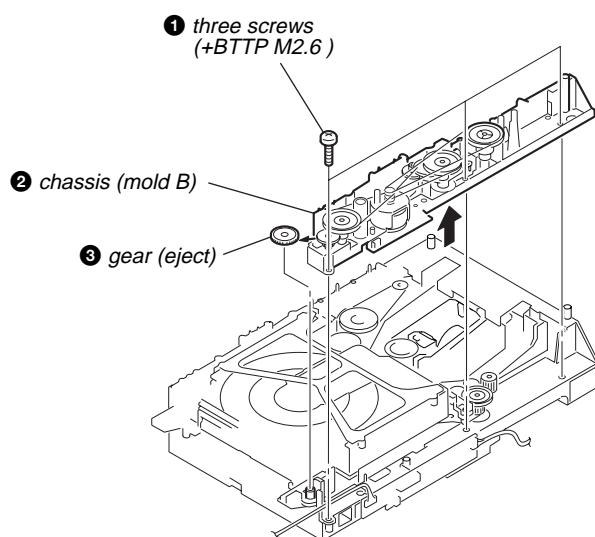
3-17. Tray (Sub)

- ① Rotating the pulley (LD), shift the slider (selection) in the arrow **A** direction.
- ② Rotating the pulley (mode) in the arrow direction, adjust the tray (sub) to be removed.
- ③ Rotating the pulley (LD), shift the slider (selection) in the arrow **B** direction.
- ④ Rotating the pulley (mode) in the arrow direction, remove the tray (sub) to be removed.

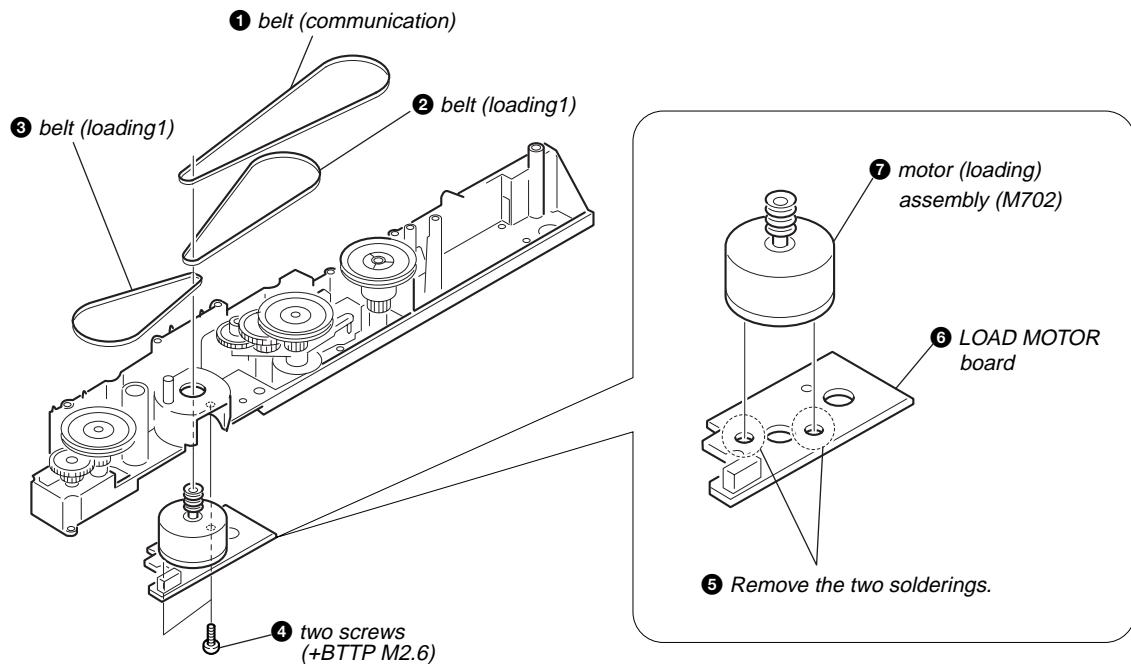


3-18. Chassis (Mold B)

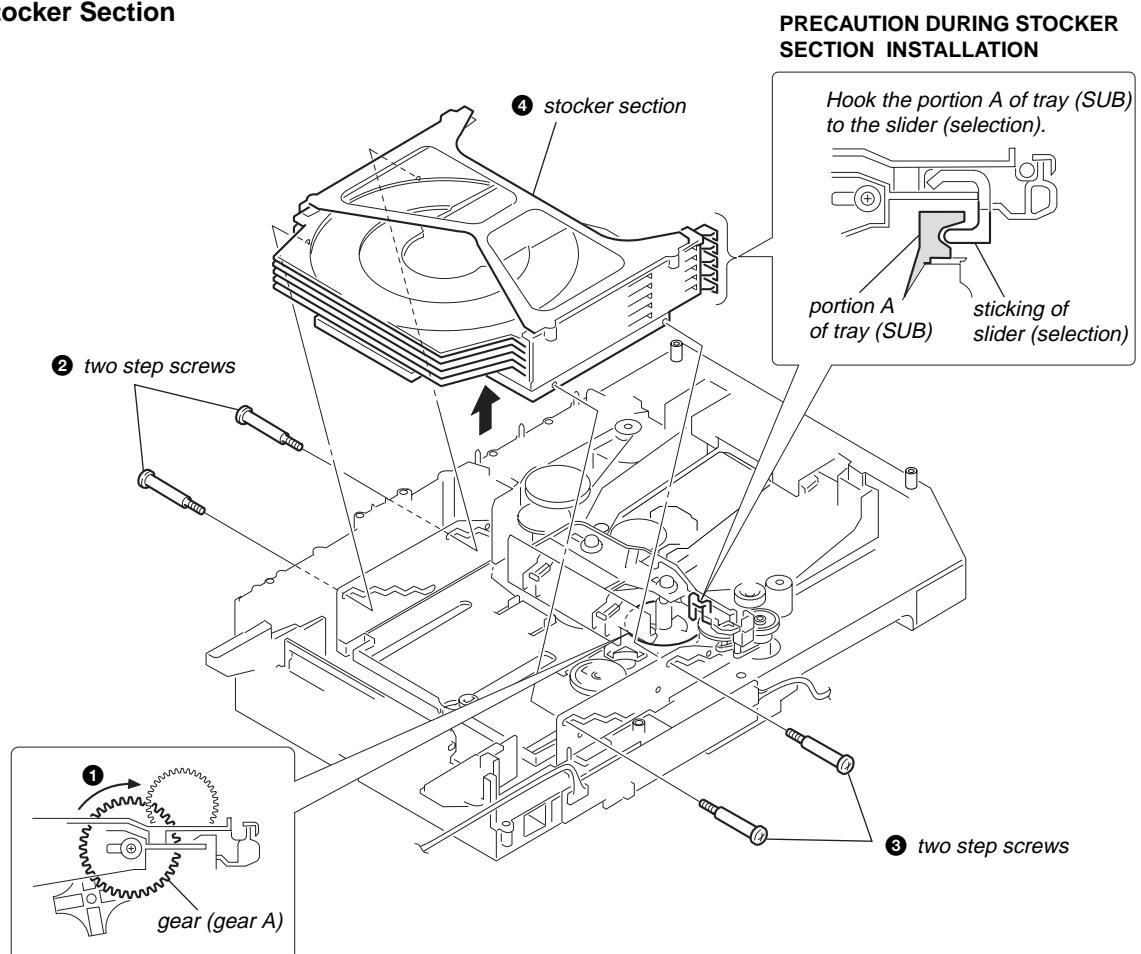
PRECAUTION DURING CHASSIS (MOLD B) INSTALLATION



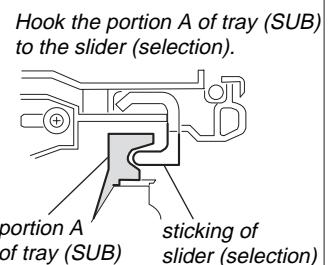
3-19. LOAD MOTOR Board, Motor (Loading) Assembly (M702)



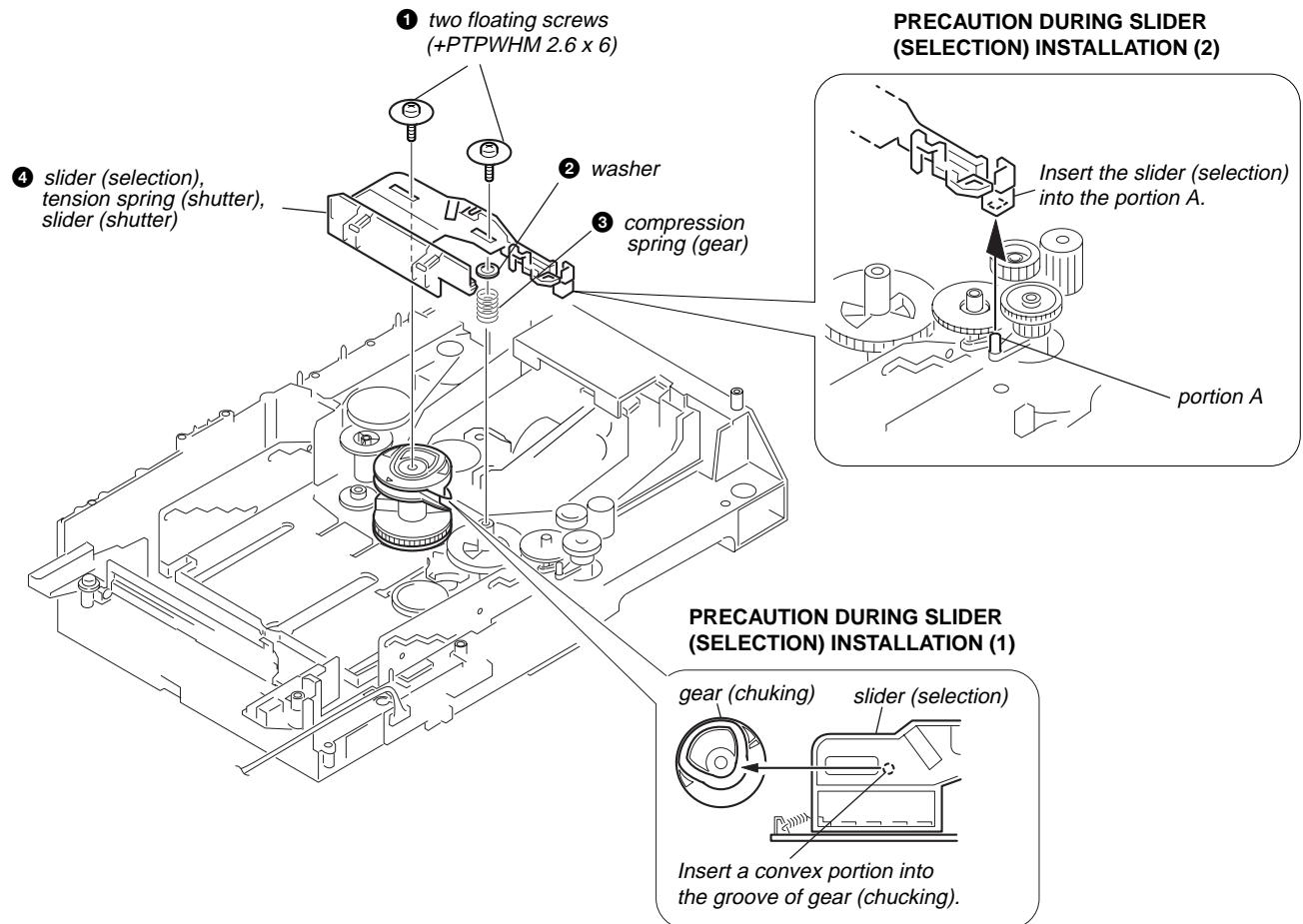
3-20. Stocker Section



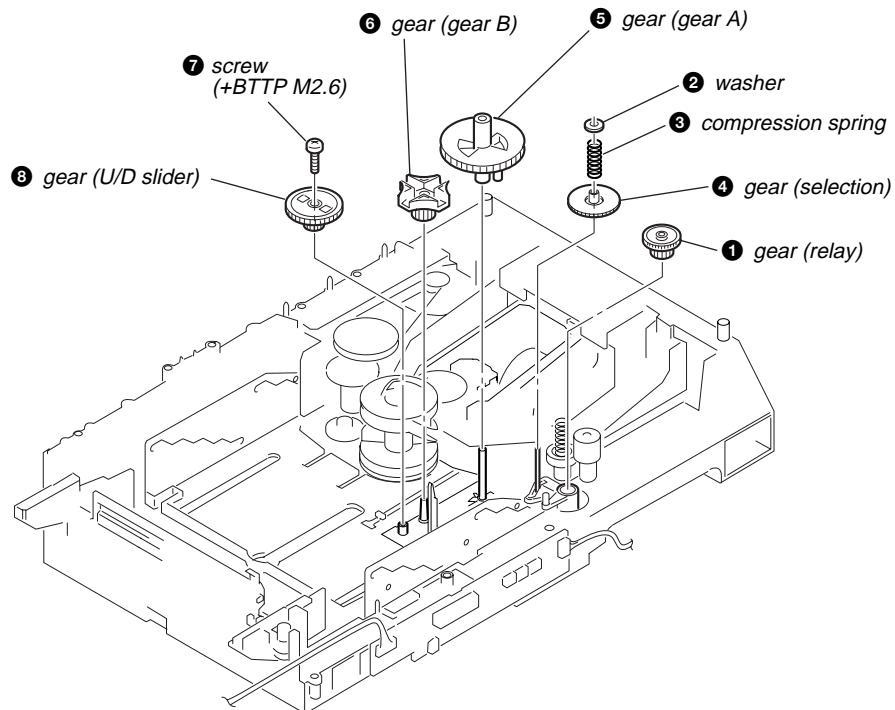
PRECAUTION DURING STOCKER SECTION INSTALLATION



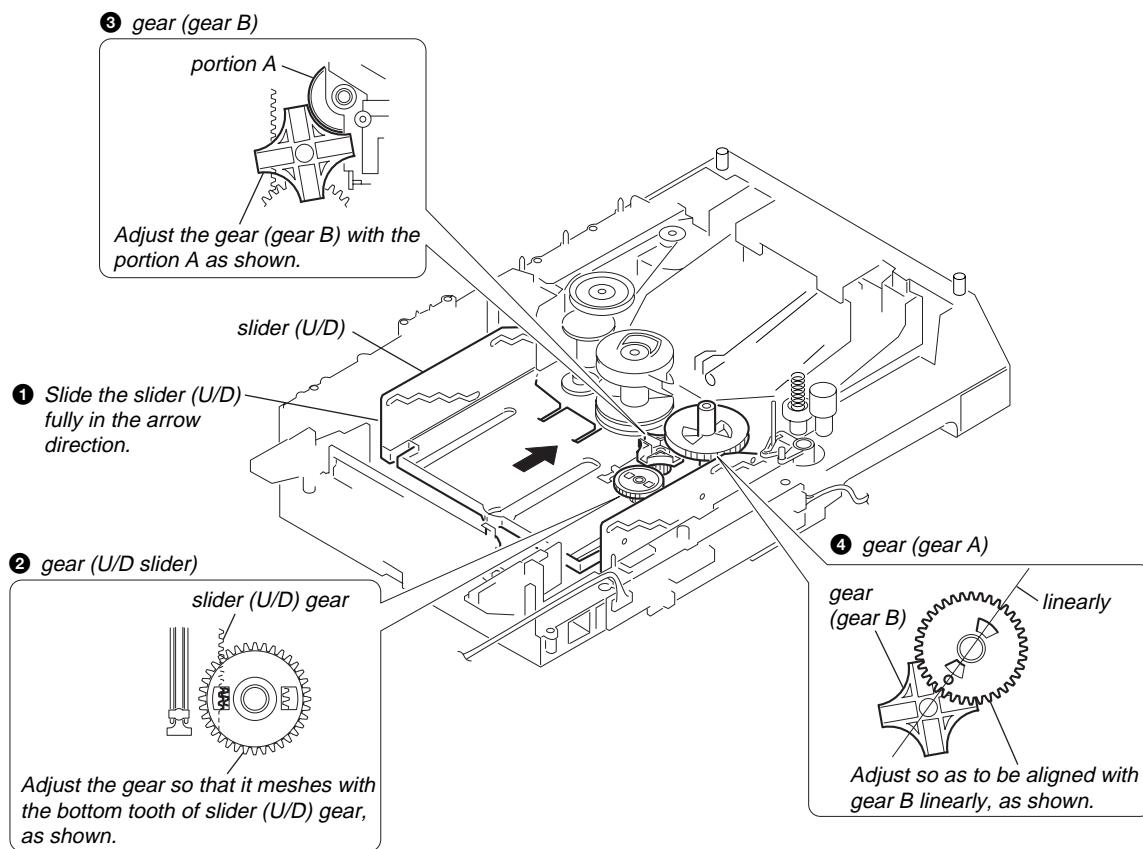
3-21. Slider (Selection), Tension Spring (Shutter), Slider (Shutter)



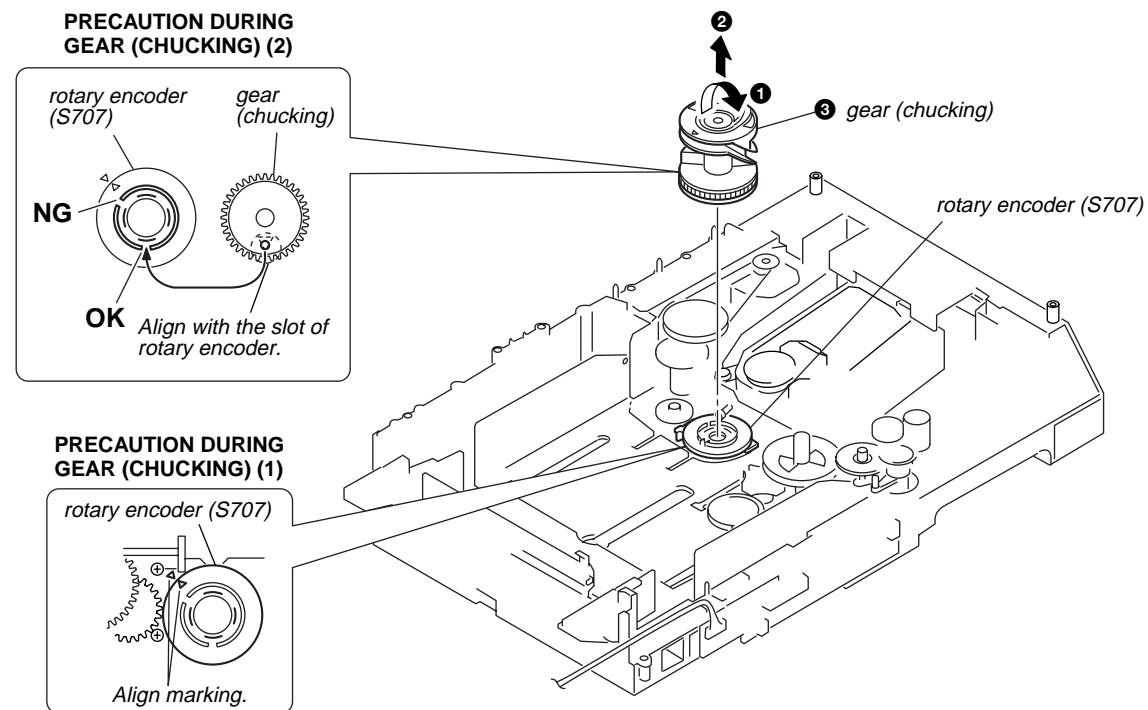
3-22. Gear (Gear A), Gear (Gear B), Gear (U/D Slider)



Precaution During Gear (Gear U/D Slider), Gear (Gear B), Gear (Gear A) Installation

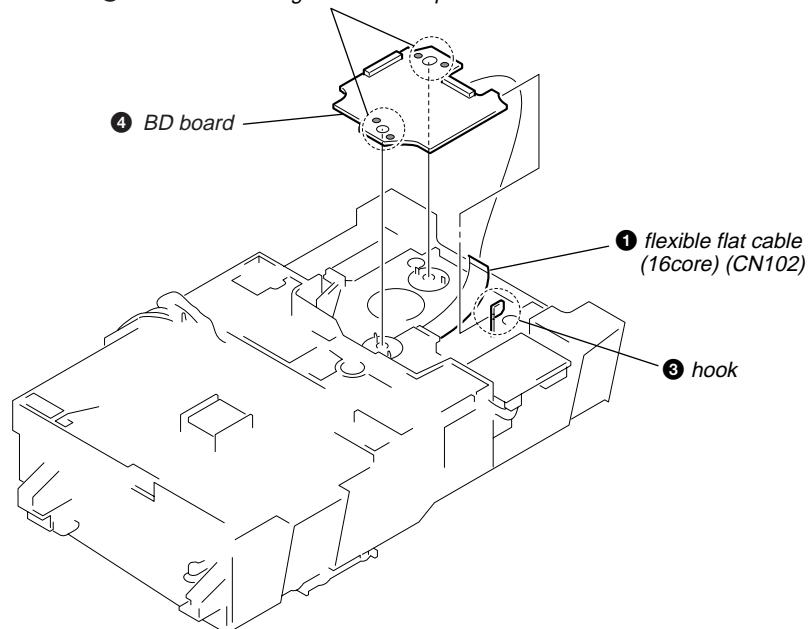


3-23. Gear (Chucking)

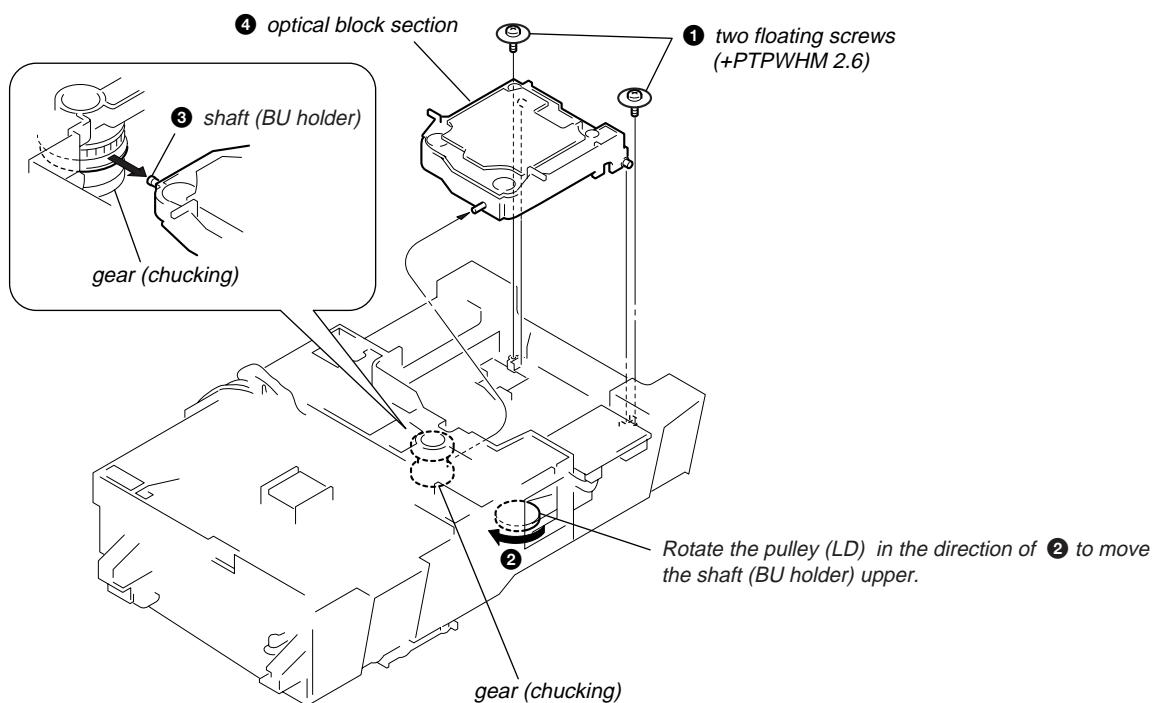


3-24. BD Board

② Remove soldering from the four points.



3-25. Optical Block Section



MEMO

SECTION 4

TEST MODE

Setting the Test Mode

Procedure:

1. Press the **POWER** button to POWER on.
2. Press the **◀◀ AMS ▶▶** (DECK A), **[SBM]** and **◀◀ AMS ▶▶** (DECK B) buttons in order without releasing the button.
3. Turn the **◀◀ AMS ▶▶** (DECK B) knob to select the menu.
4. Press the **◀◀ AMS ▶▶** (DECK B) knob to execute the test mode.

Releasing the Test Mode

Procedure 1:

1. Turn the **◀◀ AMS ▶▶** (DECK B) knob to select the Ship Mode.
2. Press the **◀◀ AMS ▶▶** (DECK B) knob to execute the Ship Mode.
3. Press the **POWER** button to POWER off.

Procedure 2:

1. Press the **◀◀ AMS ▶▶** (DECK A), **[SBM]** and **◀◀ AMS ▶▶** (DECK B) buttons in order without releasing the button.
2. Press the **POWER** button to POWER off.

Contents of test mode

No.	Display	Function
1	SYS Version	System version display
2	CDR Version	CDR version display
3	BU Test	Deck A BU test mode
4	SERVICE	Deck A Service mode
5	Ship Mode	CD Shipment mode
6	FL ALL ON	Fluorescent indicator tube test
7	FL ALL OFF	Fluorescent indicator tube test
8	FL ITIMATSU	Fluorescent indicator tube test
9	LED CHECK	LED check
10	KEY CHECK	Keyboard check
11	RM CHECK	Remote commander check
12	CDR History	CDR error history display
13	Play Speed	Deck A x4 speed

System Version Display

Procedure:

1. Enter the test mode, then turn the **◀◀ AMS ▶▶** (DECK B) knob to display “SYS Version”, and press the **◀◀ AMS ▶▶** (DECK B) knob.
2. The system version is displayed.
3. To exit from this mode, turn the **◀◀ AMS ▶▶** (DECK B) knob to display “Ship Mode”, and press the **◀◀ AMS ▶▶** (DECK B) knob to execute the Ship Mode.
4. Press the **POWER** button to POWER off.

CDR Version Display

Procedure:

1. Enter the test mode, then turn the **◀◀ AMS ▶▶** (DECK B) knob to display “CDR Version”, and press the **◀◀ AMS ▶▶** (DECK B) knob.
2. The CDR version is displayed.
3. To exit from this mode, turn the **◀◀ AMS ▶▶** (DECK B) knob to display “Ship Mode”, and press the **◀◀ AMS ▶▶** (DECK B) knob to execute the Ship Mode.
4. Press the **POWER** button to POWER off.

BU Test Mode (Deck A)

Procedure:

1. Enter the test mode, then turn the **◀◀ AMS ▶▶** (DECK B) knob to display “BU Test”, and press the **◀◀ AMS ▶▶** (DECK B) knob.
2. “bdt S CURVE” is displayed. This test mode is used in the Electrical Adjustment section.
3. Turn the **◀◀ AMS ▶▶** (DECK B) knob. “bdt RAM READ”, “bdt RAM WRITE”, “bdt COMOUT”, “bdt FB TUNE” and “bdt ERR RATE” are displayed.
4. To exit from this mode, press the **[MENU/NO]** button and turn the **◀◀ AMS ▶▶** (DECK B) knob to display “bdt ERR RATE”.
5. Press the **◀◀ AMS ▶▶** (DECK A), **[SBM]** and **◀◀ AMS ▶▶** (DECK B) buttons in order without releasing the button.
6. Press the **POWER** button to POWER off.

Service Mode (Deck A)

Procedure:

1. Enter the test mode, then turn the **◀◀ AMS ▶▶** (DECK B) knob to display “SERVICE”, and press the **◀◀ AMS ▶▶** (DECK B) knob.
2. “SERVICE MODE” is displayed.
3. Press the **[ERASE]** button, the “SLED OUT” is displayed and the sled moves to the outermost position.
4. Press the **[FINALIZE]** button, the “SLED IN” is displayed and the sled moves to the innermost position.
5. Press the **◀◀ AMS ▶▶** (DECK B) knob, then “SERVICE MODE” is displayed again.
6. To exit from this mode, press the **◀◀ AMS ▶▶** (DECK A), **[SBM]** and **◀◀ AMS ▶▶** (DECK B) buttons in order without releasing the button.
7. Press the **POWER** button to POWER off.

Note: Always move the pick-up to the most inside position when exiting from this mode.

Ship Mode

Procedure:

1. Enter the test mode, then turn the **◀◀ AMS ▶▶** (DECK B) knob to display “Ship Mode”, and press the **◀◀ AMS ▶▶** (DECK B) knob.
2. “Push POWER!” is displayed.
3. Press the **POWER** button to POWER off.

FL ALL ON Mode

Procedure:

1. Enter the test mode, then turn the **◀◀ AMS ▶▶** (DECK B) knob to display “FL ALL ON”, and press the **◀◀ AMS ▶▶** (DECK B) knob.
2. All segments of fluorescent indicator tube and all LEDs turn on.
3. Press the **[MENU/NO]** button, then “FL ALL ON” is displayed again.
4. To exit from this mode, turn the **◀◀ AMS ▶▶** (DECK B) knob to display “Ship Mode”, and press the **◀◀ AMS ▶▶** (DECK B) knob to execute the Ship Mode.
5. Press the **POWER** button to POWER off.

FL ALL OFF Mode

Procedure:

1. Enter the test mode, then turn the **[◀◀ AMS ▶▶]** (DECK B) knob to display “FL ALL OFF”, and press the **[◀◀ AMS ▶▶]** (DECK B) knob.
2. All segments of fluorescent indicator tube and all LEDs turn off.
3. Press the **[MENU/NO]** button, then “FL ALL OFF” is displayed again.
4. To exit from this mode, turn the **[◀◀ AMS ▶▶]** (DECK B) knob to display “Ship Mode”, and press the **[◀◀ AMS ▶▶]** (DECK B) knob to execute the Ship Mode.
5. Press the **[POWER]** button to POWER off.

FL ITIMATSU Mode

Procedure:

1. Enter the test mode, then turn the **[◀◀ AMS ▶▶]** (DECK B) knob to display “FL ITIMATSU”, and press the **[◀◀ AMS ▶▶]** (DECK B) knob.
2. Checkerered patterns of segments are displayed.
3. Press the **[MENU/NO]** button, then “FL ITIMATSU” is displayed again.
4. To exit from this mode, turn the **[◀◀ AMS ▶▶]** (DECK B) knob to display “Ship Mode”, and press the **[◀◀ AMS ▶▶]** (DECK B) knob to execute the Ship Mode.
5. Press the **[POWER]** button to POWER off.

LED Check Mode

Procedure:

1. Enter the test mode, then turn the **[◀◀ AMS ▶▶]** (DECK B) knob to display “LED CHECK”, and press the **[◀◀ AMS ▶▶]** (DECK B) knob.
2. Turn the **[◀◀ AMS ▶▶]** (DECK A) or (DECK B) knob clockwise. The green LED (DISC 1) turns on, then the orange LED (DISC 1) turns on. The each orange LED turns on after the green LED from DISC 1 to DISC 5. The LED (SBM) turns on at last. Counterclockwise rotation gives a performance in reverse order.
3. Press the **[MENU/NO]** button, then “LED CHECK” is displayed again.
4. To exit from this mode, turn the **[◀◀ AMS ▶▶]** (DECK B) knob to display “Ship Mode”, and press the **[◀◀ AMS ▶▶]** (DECK B) knob to execute the Ship Mode.
5. Press the **[POWER]** button to POWER off.

KEY Check Mode

Procedure:

1. Enter the test mode, then turn the **[◀◀ AMS ▶▶]** (DECK B) knob to display “KEY CHECK”, and press the **[◀◀ AMS ▶▶]** (DECK B) knob.
2. “Got **[◀◀]** keys” is displayed.
3. Press the buttons, and when all the buttons are pressed (without the **[POWER]** button), “Got 36 keys” will be displayed.
4. To exit from this mode, press the **[◀◀ AMS ▶▶]** (DECK A), **[SBM]** and **[◀◀ AMS ▶▶]** (DECK B) buttons in order without releasing the button.
5. Press the **[POWER]** button to POWER off.

Remote Commander Check

Procedure:

1. Enter the test mode, then turn the **[◀◀ AMS ▶▶]** (DECK B) knob to display “RM CHECK”, and press the **[◀◀ AMS ▶▶]** (DECK B) knob.
2. Press the **[▶]** key on the remote commander, then “Got PlayCom” is displayed.
3. Press the **[MENU/NO]** button, then “RM CHECK” is displayed again.
4. To exit from this mode, turn the **[◀◀ AMS ▶▶]** (DECK B) knob to display “Ship Mode”, and press the **[◀◀ AMS ▶▶]** (DECK B) knob to execute the Ship Mode.
5. Press the **[POWER]** button to POWER off.

CDR History Display

Procedure:

1. Enter the test mode, then turn the **[◀◀ AMS ▶▶]** (DECK B) knob to display “CDR History”, and press the **[◀◀ AMS ▶▶]** (DECK B) knob.
2. “00 ##### #####” is displayed as the first error history.
3. Turn the **[◀◀ AMS ▶▶]** (DECK B) knob to select the error history. The number of error histories is ten in all. (Refer to “Contents of CDR error history”.)
4. Press the **[MENU/NO]** button, then “CDR History” is displayed again.
5. To exit from this mode, turn the **[◀◀ AMS ▶▶]** (DECK B) knob to display “Ship Mode”, and press the **[◀◀ AMS ▶▶]** (DECK B) knob to execute the Ship Mode.
6. Press the **[POWER]** button to POWER off.

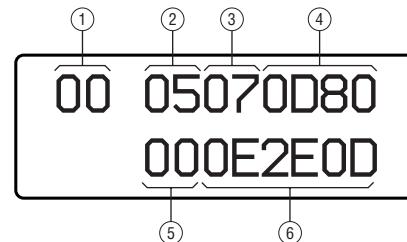
Play Speed Selection Mode (Deck A)

Procedure:

1. Enter the test mode, then turn the **[◀◀ AMS ▶▶]** (DECK B) knob to display “Play Speed”, and press the **[◀◀ AMS ▶▶]** (DECK B) knob.
2. “x4 Play” is displayed. If a CD is in the deck A, pressing the **[▶]** button executes the 4 times speed playback.
3. Press the **[■]** button to stop the playback.
4. Press the **[MENU/NO]** button, then “Play Speed” is displayed again.
5. To exit from this mode, turn the **[◀◀ AMS ▶▶]** (DECK B) knob to display “Ship Mode”, and press the **[◀◀ AMS ▶▶]** (DECK B) knob to execute the Ship Mode.
6. Press the **[POWER]** button to POWER off.

Contents of CDR error history

display(example)



(hexadecimal)

① Order of the error history

00 to 09: ten error histories in all

② Error contents

- 01: unable to focus on
- 02: Q code/ATIP discontinuous (several frames preceding)
- 03: Q code/ATIP unreadable
- 04: search taking more than sixteen seconds
- 05: focus failure
- 06: sled over run
- 07: not passing by start time to write
- 08: audio buffer over
- 09: sync failure
- OA: Spindle lock taking more than 8 seconds

example : 05 is focus failure

③ Operation mode

bit 7: Speed

0: normal speed

1: x4 speed

bit 6 to bit 0: Number of inner condition

01: POWER off condition/during shift to POWER on

02: POWER off and shipment setting/during shift to POWER off and shipment setting

03: stop condition/during stop

04: during start up of servo

05: during TOC reading and others

06: during CD TEXT reading

07: during standby/waiting for command from the CD system)/during search

08: during playback

09: during manual search(playback)

0A: during pause

0B: during manual search(pause)

0C: during OPC

0D: recording standby/during recording pause

(enable to shift to recording)

0E: during recording

0F: unable to record (waiting for shift to being recordable)

10: PMA updating

11: during operation of unfinalize

12: during operation of finalize

13: PMA erasing

14: emergency

15: recording preparation

16: recording end

examples :

HEX	bit	7	6	5	4	3	2	1	0	Operation mode
07		0	0	0	0	0	1	1	1	normal speed, during standby/waiting for command from the CD system)/during search
91		1	0	0	1	0	0	0	1	x4 speed, during operation of unfinalize

④ Start time of read in(compression method)

bit 15 to bit 13 : (min)

0: 97 min

1: 96 min

2: 95 min

7: others

bit 12 to bit 7: (sec)

bit 6 to bit 0: (frame)

examples :

HEX	bit	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	Start time of read in
0D, 80		0	0	0	0	1	1	0	1	1	0	0	0	0	0	0	0	97 : 27 : 00
11, 16		0	0	0	1	0	0	0	1	0	0	0	1	0	1	1	0	97 : 34 : 22

⑤ Write POWER (integer of mW x 10, available during write processing)

examples: 00 means unavailable

(when ③ operation mode is not recording)

: A3 means 163(decimal), i.e. 16.3 mW

⑥ ATIME (min)/(sec)/(frame)

example: 0E, 2E, 0D means 14 : 46 : 13

Abbreviations:

ATIP : Absolute Time In Pre-groove

OPC : Optimum POWER Control

PMA : Program Memory Area

SECTION 5

ELECTRICAL ADJUSTMENTS

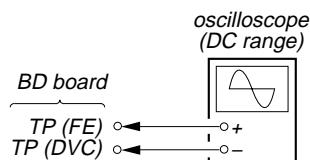
CD SECTION (DECK A)

Note :

1. CD Block is basically designed to operate without adjustment. Therefore, check each item in order given.
2. Use YEDS-18 disc (3-702-101-01) unless otherwise indicated.
3. Use an oscilloscope with more than $10M\Omega$ impedance.
4. Clean the object lens by an applicator with neutral detergent when the signal level is low than specified value with the following checks.

S Curve Check

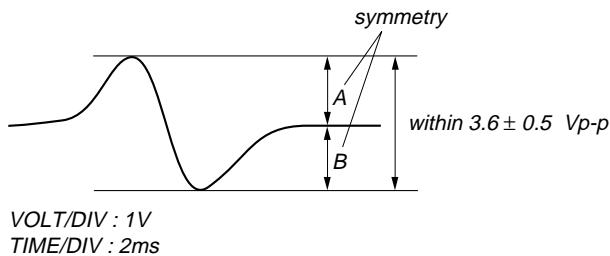
Connection :



Procedure :

1. Connect an oscilloscope to test point TP (FE) and TP (DVC) on the BD board.
2. Turn the power on.
3. Load the disc (YEDS-18).
4. Enter the test mode, select the BU Test and press the **AMS** (DECK B) knob to display "bdt S CURVE".
5. Press the **AMS** (DECK B) knob. "LD AL" is displayed and playback starts automatically.
6. Check the oscilloscope waveform (S-curve) is symmetrical between A and B. And confirm peak to peak level within 3.6 ± 0.5 Vp-p.
7. Press the **MENU/NO** button to stop playback.
8. Exit from the test mode.

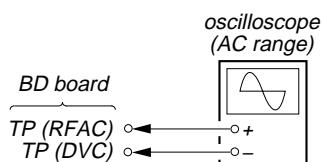
(Refer to the TEST MODE Section)



Note: Try to measure several times to make sure than the ratio of A : B or B : A is more than 10 : 7.

RF Level Check

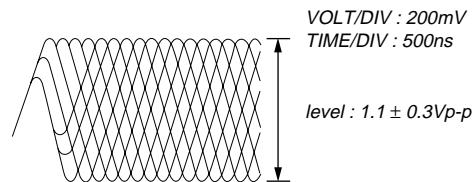
Connection :



Procedure :

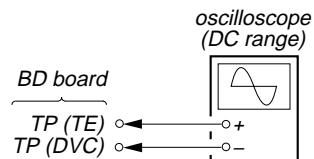
1. Connect an oscilloscope to TP (RFAC) and TP (DVC).
2. Turn the power on.
3. Load the disc (YEDS-18) and playback the number five track.
4. Confirm that oscilloscope waveform is clear and check RF signal level is correct or not.

Note: A clear RF signal waveform means that the shape "◊" can be clearly distinguished at the center of the waveform.



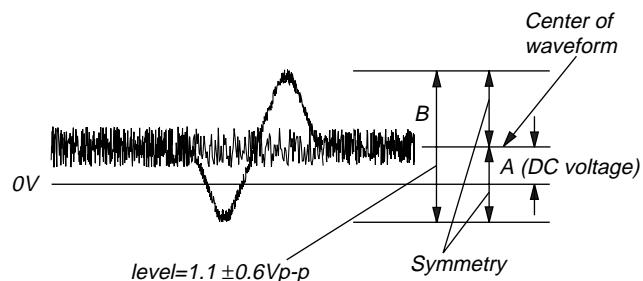
E-F Balance (1 Track jump) Check

Connection :



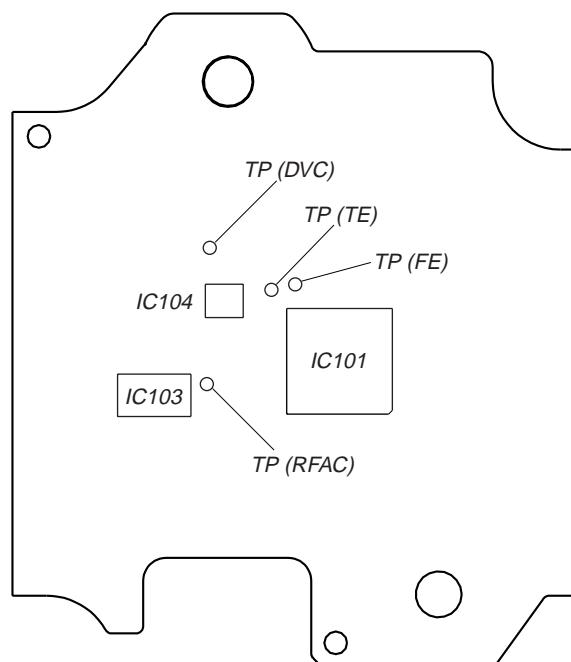
Procedure:

1. Connect an oscilloscope to TP (TE) and TP (DVC).
2. Turn the power on.
3. Load the disc (YEDS-18) and playback the number five track.
4. Press the **II** (DECK A) button. (Becomes the 1 track jump mode.)
5. Confirm the level B and A (DC voltage) on the oscilloscope waveform.



Specification level: $\frac{A}{B} \times 100 = \text{less than } \pm 22\%$

[BD BOARD] — SIDE A —

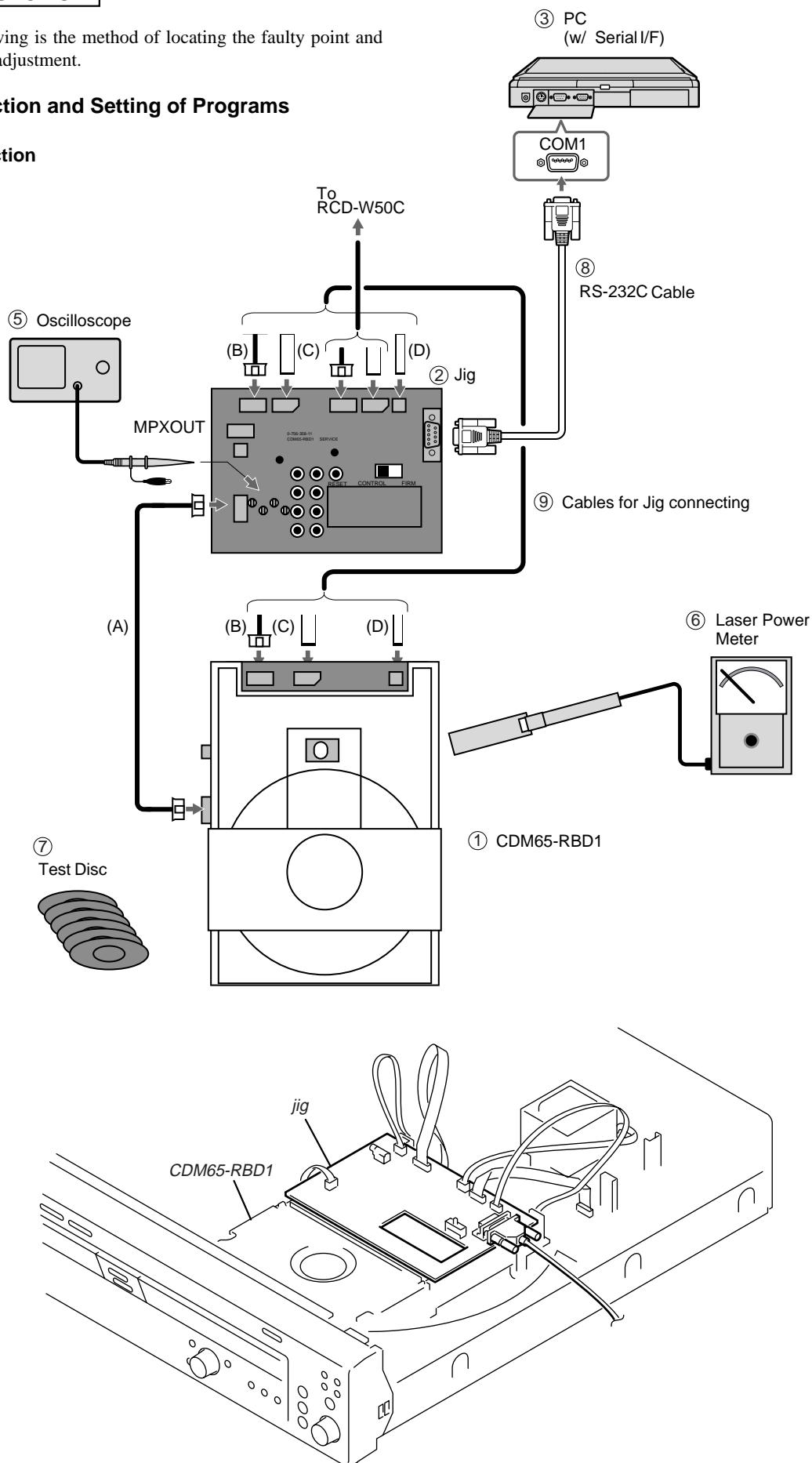


CD-R/RW SECTION

- * The following is the method of locating the faulty point and electrical adjustment.

1. Connection and Setting of Programs

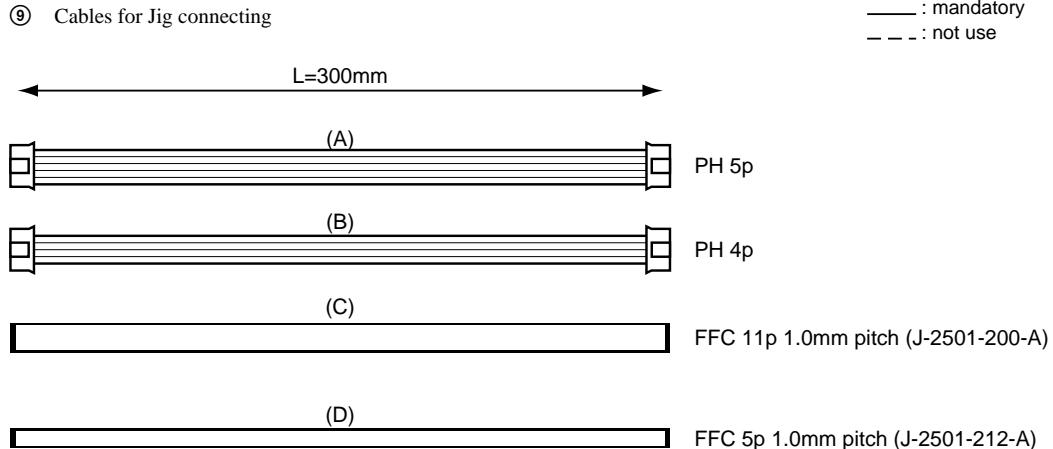
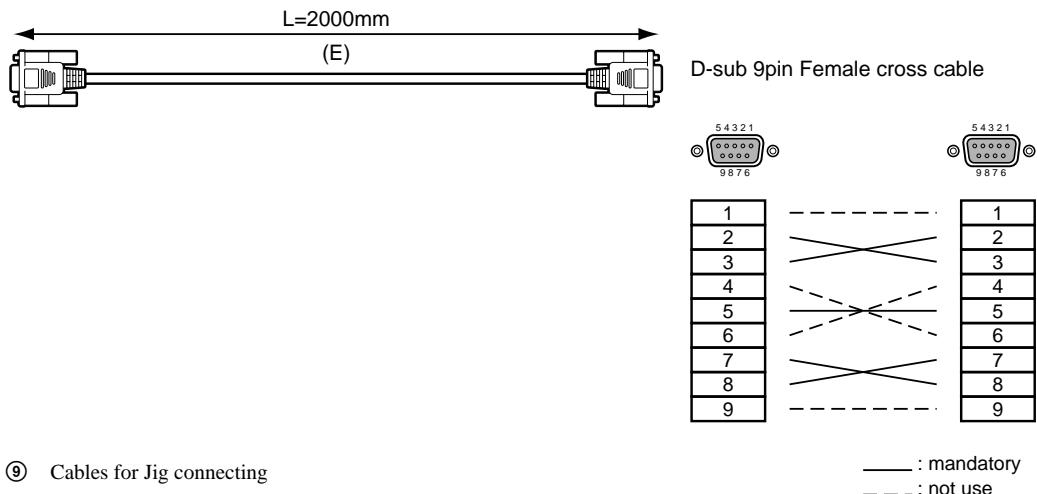
1-1. Connection



▲ Fig. Position of Jig (Set the jig after removing the cover of CDM65-RBD1)

1-2. Equipments to prepare

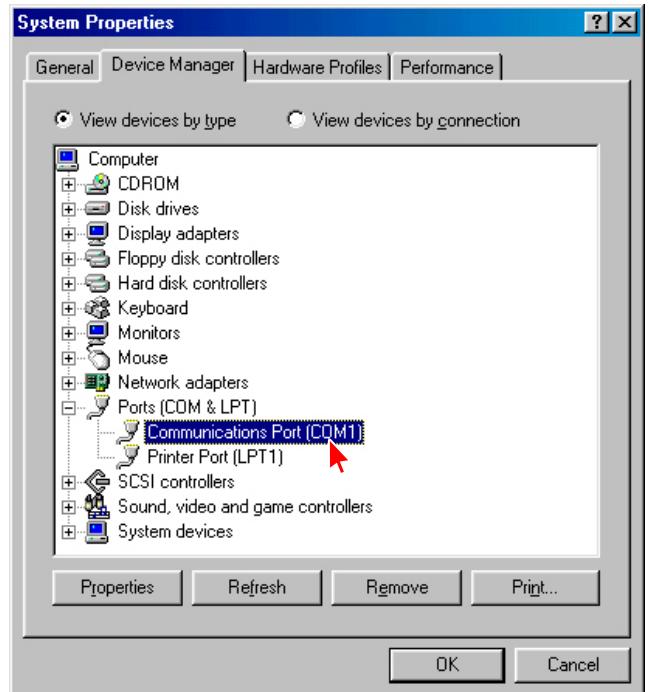
① Test Object	Both RBD1 and CDM65-RBD1 shall be tested.	
	RBD1 :	Flash Memory Writing of of Circuit Test by Self-diagnostics
	CDM65-RBD1 :	Electrical Adjustment Performance Test
② Jig	(With ⑨ Cables, Parts No.J-2501-223-A)	
③ PC	Windows95/98/2000/Me with COMport (RS-232C)	
④ Programs	TeraTerm Pro + Service macro	
⑤ Oscilloscope	More than 150MHz	
⑥ Laser Power Meter	LEADER LPM-8001 (Parts No.J-2501-046-A)	
⑦ Test Disc	PATD-012 : (Parts No.4-225-203-1) Adjustment for Playback (CD,CD-R) TCD-W091W : (Parts No.J-2501-226-A) Adjustment for Playback (CD-RW) CRM74 (Blank CD-R) : Adjustment and Check for Recording (CD-R) CWM74 (Blank CD-RW) : Check for Recording (CD-RW) TCD-W032W : (Parts No.J-2501-227-A) Defocus tolerance (CD-RW)	
⑧ RS-232C Cable		



1-3. Setting of Programs (Tera Term Pro and Service macro)

* Confirmation of System (Windows 98 is used in this explanation) Preparation for Terminal software

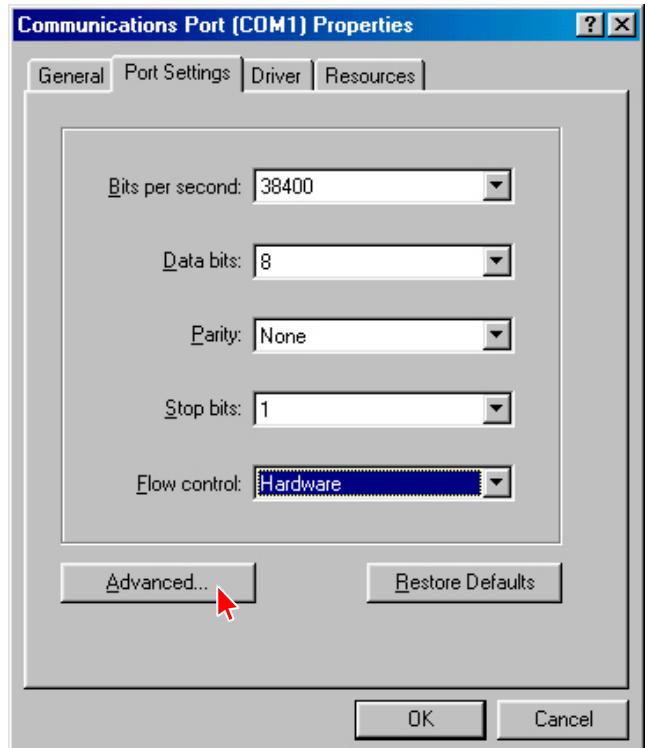
- 1) Set up the serial port from OS.
- a) Select Start → Settings → Control Panel and select System → Device manager → Communication Port (COMn) (see Fig. 1-1)
- * Specify the COM port that connected with JIG of CDM65.



▲ Fig. 1-1

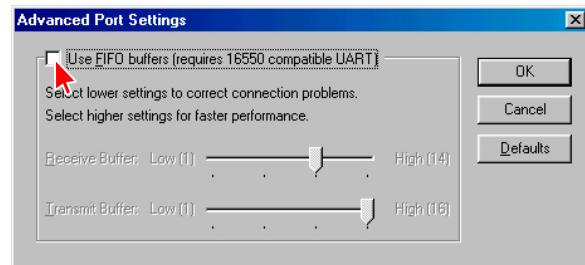
- b) Double click COMn (as you connect to the Jig-CDM65) Set the parameters as below.

Bits per second : 38400
 Data bits : 8
 Parity : none
 Stop bits : 1
 Flow control : hardware
 (see Fig.1-2)



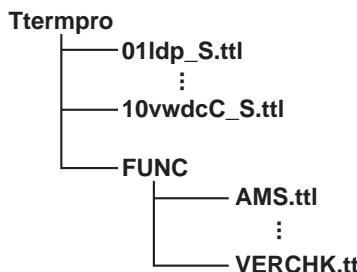
▲ Fig. 1-2

c) Press “Advanced...” button (see Fig.1-2)
Remove the check “Use FIFO buffers ...”
(see Fig.1-3)



▲ Fig. 1-3

2) Unzip the file “ttermpp23.zip” by PC.
(The file “ttermpp23.zip” is distributed together with the service manual.)
3) After unzip the files, you can find setup.exe.
Double click the setup.exe.
Please install as the installer is.
Do not change the directory that files are installed. (use default)
4) Unzip the file “files-0208.zip” by PC.
Copy all “ttl” file and “FUNC” folder which are contained in “files-0208” and paste them in the “Ttermpro” file as below.
(The file “files-0208.zip” is distributed together with the service manual.)



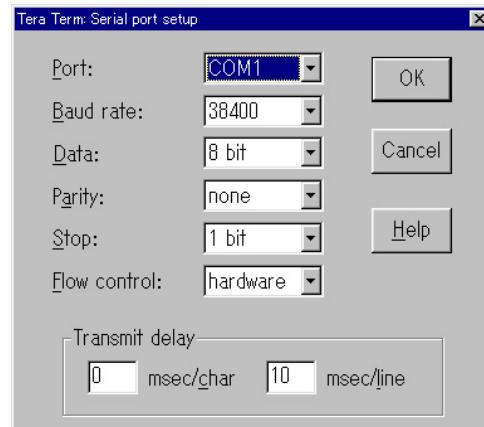
▲ Fig. 1-4

Note : Do not change the directory path.

5) Start-up the TeraTermPro
Double click the ttermpp.exe.
6) Set up the TeraTermPro (IMPORTANT!!)
a) Select Setup → Serial Port... and set the parameters as below.

Port : (As you connect to the Jig-CDM65)
Baud rate : 38400
Data : 8 bit
Parity : none
Stop : 1 bit
Flow control : hardware
Transmit delay : 0 msec/char 10 msec/line

After settings, press “OK” button. (see Fig.1-5)



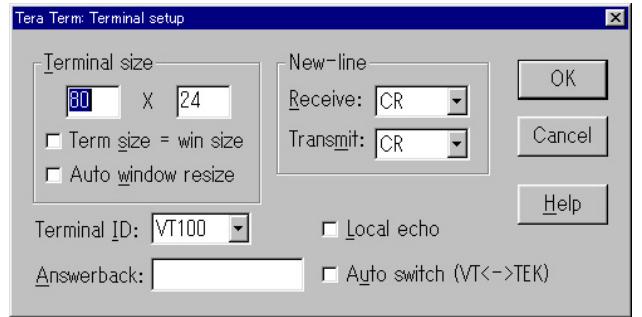
▲ Fig. 1-5

b) Terminal setup

Set the parameters as below.

New-line receive : CR
transmit : CR

After settings, press “OK” button. (see Fig.1-6)



▲ Fig. 1-6

c) General setup

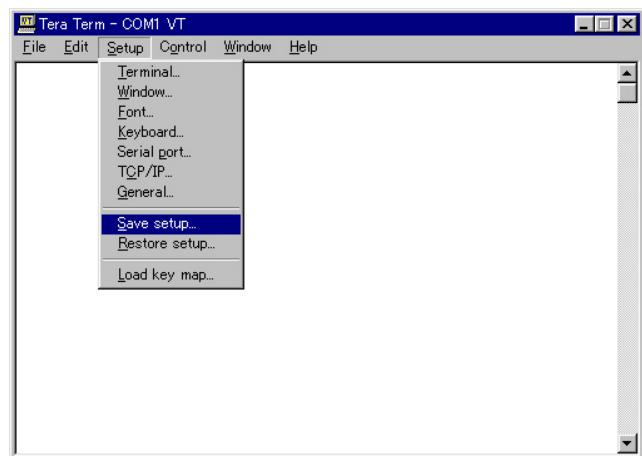
Select the language and press “OK” button. (see Fig.1-7)



▲ Fig. 1-7

d) Saving the setup

Select Setup → Save setup... and save as teraterm.ini in the Ttermpro directory. (see Fig.1-8)



▲ Fig. 1-8

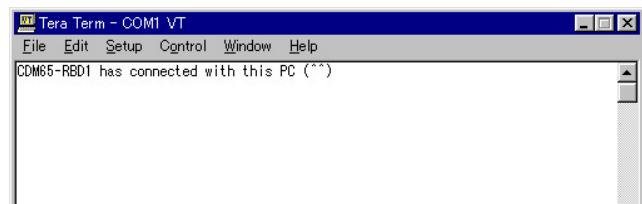
7) Connect the JIG and CDM65.

8) Confirm the S510 on JIG is CONTROL'.

9) Power on the CDM65 and press SW101(RESET) on JIG.

“CDM65-RBD1 has connected with this PC (^)” is displayed. (see Fig.1-9)

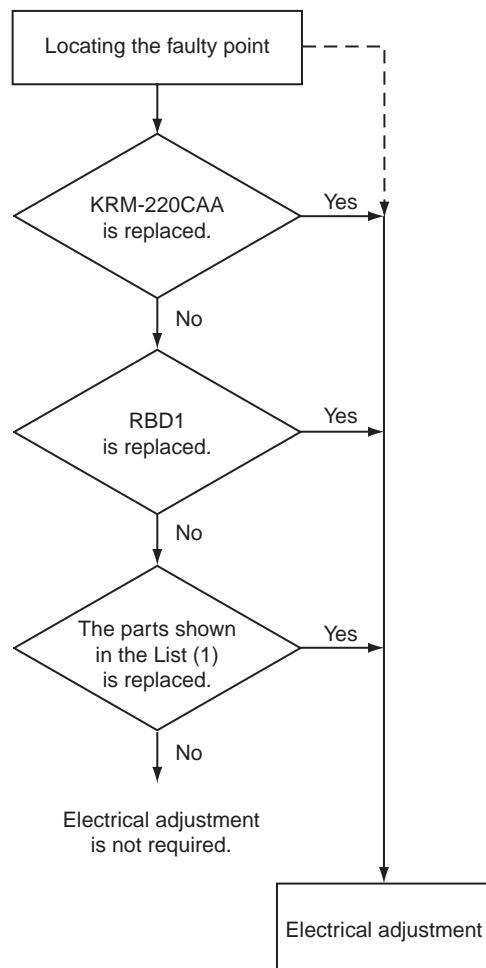
If above message is not displayed, you may have some mistakes. Please confirm previous setting procedures again.



▲ Fig. 1-9

2. Repair Works That Require Electrical Adjustment

In the case of repair works as shown below, electrical adjustment is required.

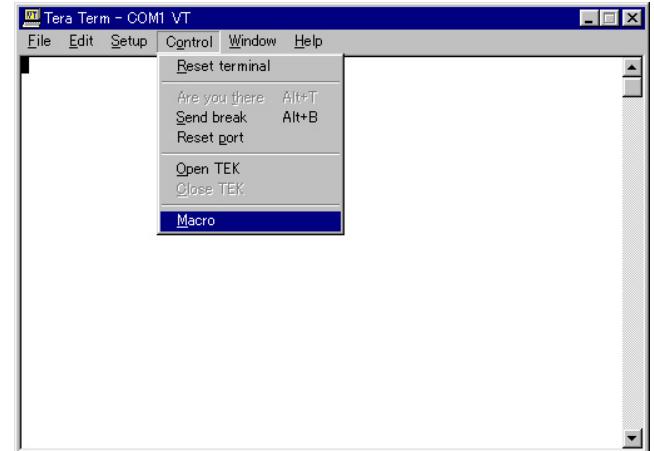


List (1) : IC101, IC103, IC171, IC201, IC502

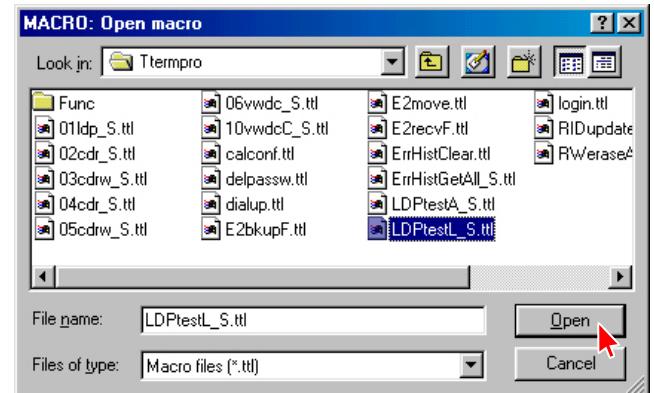
3. Locating the Faulty Point

3-1. Laser Power Check

- 1) Select the menu as follows. Control → Macro, and select LDPtestL_S.ttl.
Press “Open”. (Fig. 3-1, 3-2)

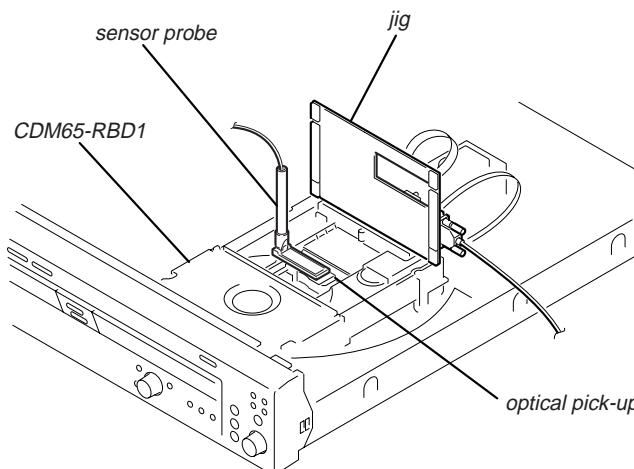


▲ Fig. 3-1



▲ Fig. 3-2

- 2) Press the “RESET” button (SW101) of the jig as prompted by the display.
- 3) Place probe of a laser power meter in the specified position following the display as shown in Fig. 3-3. (See Fig. 3-3-a)



▲ Fig. 3-3-a

Note : Do not add stress to an optical pick-up.



▲ Fig. 3-3

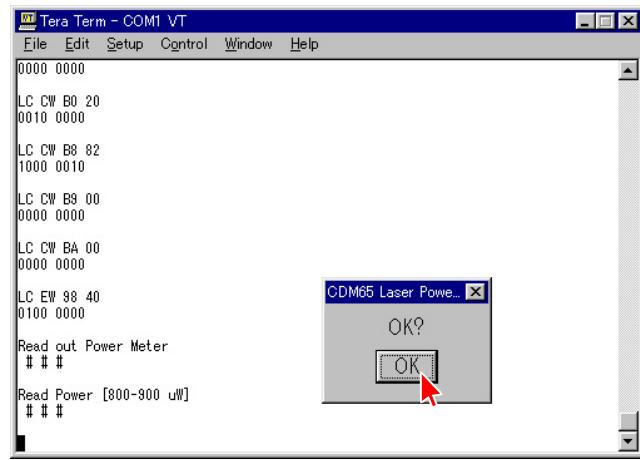
4) When the display shown in Fig. 3-4 appears, set the Range of a laser power meter to “1 mW” and press “OK”.



▲ Fig. 3-4

5) Check that the laser power meter reading satisfies the following requirement. When the laser power satisfies the required specification, press “OK”. (Fig. 3-5)

LEADER LPM-8001 : 0.76 to 0.86 mW



▲ Fig. 3-5

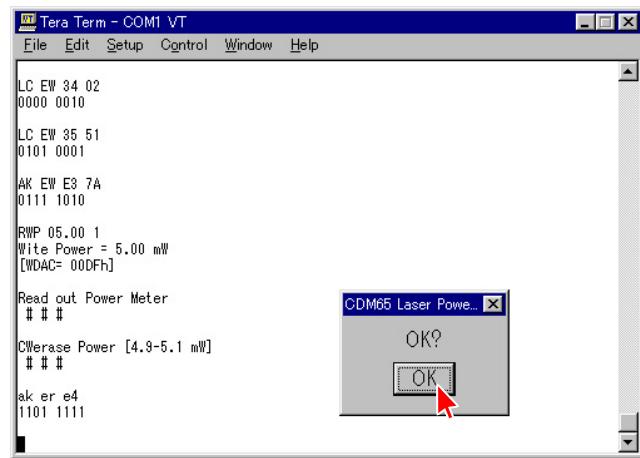
6) When the display shown in Fig. 3-6 appears, set the Range of a laser power meter to “10 mW” and press “OK”.



▲ Fig. 3-6

7) Check that the laser power meter reading satisfies the following requirement. When the laser power satisfies the required specification, press “OK”. (Fig. 3-7)

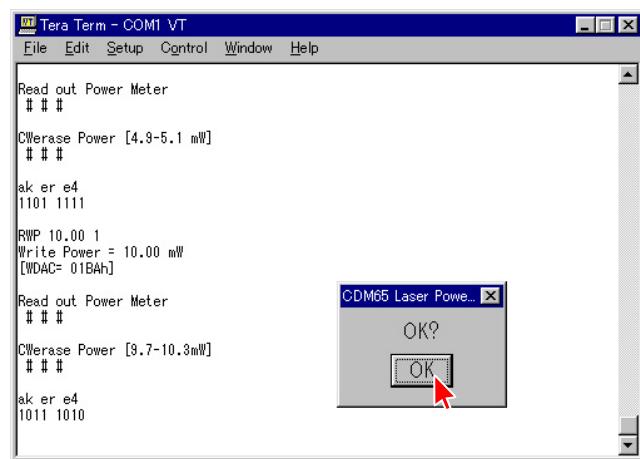
LEADER LPM-8001 : 4.5 to 4.7 mW



▲ Fig. 3-7

8) Check that the laser power meter reading satisfies the following requirement. When the laser power satisfies the required specification, press “OK”. (Fig. 3-8)

LEADER LPM-8001 : 9.2 to 9.6 mW



▲ Fig. 3-8

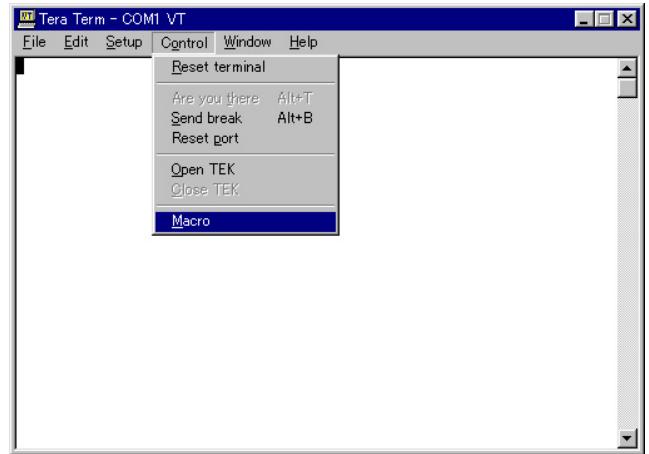
9) Check that the message “Power Check End” appears on display. (Fig. 3-9)

If the measurement result is outside the specification value, either perform section 4. CDM65-RBD1 Electrical Adjustment (see page 39), or locate the cause of the error by performing the Laser Deterioration Judgment.

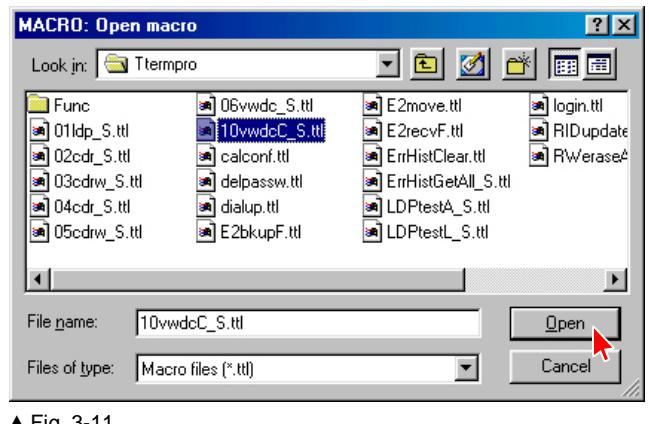
▲ Fig. 3-9

3-2. Laser Deterioration Judgment

1) Select the menu as follows. Control → Macro, and select 10vwdcC_S.ttl.
Press “Open”. (Fig. 3-10, 3-11)



▲ Fig. 3-10

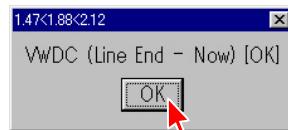


▲ Fig. 3-11

2) Press the “RESET” button (SW101) of the jig as prompted by the display.

3) When the message [OK] appears as shown in Fig. 3-12, press the “OK” button.

When the laser unit KRM-220CAA (Op) is normal without deterioration of laser, the message [OK] appears. If the laser unit is deteriorated, the message [NG] appears. Then, replace the laser unit KRM-220CAA (Op).



▲ Fig. 3-12

4) Check that the message “CDRW VWDC-CHECK completed!” appears. (Fig. 3-13)

NG Judgment Result Indication

When the present VWDC value of the laser unit KRM-220CAA (Op) does not satisfy the required specification, the message “VWDC (Line End - Now) [NG]” appears.

Measure: Check the peripheral of CN101.
Replace KRM-220CAA.

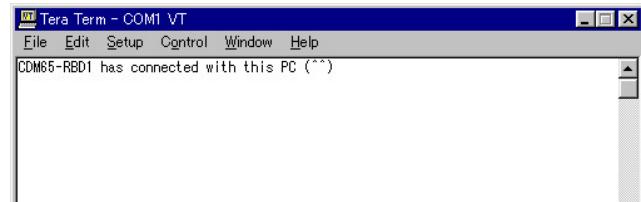
The screenshot shows a terminal window titled "Tera Term - COM1 VT". The menu bar includes File, Edit, Setup, Control, Window, and Help. The main window displays the following text:
 AN5 Measure START
 No. 1, 387, 386, 386,
 AN5 Measure END!
 e2pr 0D
 E2PROM Word Read
 Add,Data
 00h,0171h
 LC EW 35 00
 1000 0000
 AK EW E3 38
 0011 1000
 LC EW 98 00
 0000 0000
 CDRW VWDC-CHECK completed!!
 # # #

▲ Fig. 3-13

3-3. Use of Self Diagnosis Function-1 (In the case when result data of the past electrical adjustment, is not needed.)

Perform the self diagnosis as described below in the case when electrical adjustment is not performed yet, or when result data of the electrical adjustment in the past, is not needed and ready to be erased.)

- 1) Connect the CDM65-RBD1 (abbreviated as CDM65 hereafter) that is going to be repaired, the jig and a PC following the Connection Diagram as shown in section 1-1.
- 2) Turn on the power of the RCD-W50C in which the CDM65 is installed.
- 3) Start up the TeraTermPro that is installed in PC. Set the switch S510 on the jig to “CONTROL”.
- 4) Press the “RESET” button (SW101) of the jig. (Fig. 3-14)



The screenshot shows a terminal window titled "Tera Term - COM1 VT". The menu bar includes File, Edit, Setup, Control, Window, and Help. The main window displays the following text:
 CDM65-RBD1 has connected with this PC (^~)

▲ Fig. 3-14

- 5) Type portchk [Enter] from keyboard of PC. (Fig. 3-15)

Note 5-1 : When the KRM-220CAA is connected, the spindle motor rotates at a high speed. If the message “H8/3064 Port Check END!” appears, press the “RESET” button and stop the spindle.

Note 5-2 : When the CDM65 (loading mechanism) is installed, ignore the message “PA (#93-100): NG”.

Confirm that “OK” is displayed in all items except for the cases as described above.

If “NG” is displayed in any item, it is assumed that the pin number of IC501 as shown in Fig. 3-15 is defective or its peripheral has abnormality. Perform the repair work again and repeat the self diagnosis. Repeat the repair work and self diagnosis until OK is displayed.

The screenshot shows a terminal window titled "Tera Term - COM1 VT". The menu bar includes File, Edit, Setup, Control, Window, and Help. The main window displays the following text:
 portchk
 H8/3064 Port Check START
 P0: #2-#9: OK
 P4:#18-#26: OK
 P1:#36-#43: OK
 P2:#46-#52: OK
 P5:#53-#56: OK
 P6:#58-#61,#69-#72: OK
 PA:#93-#100:NG
 H8/3064 Port Check END!

▲ Fig. 3-15

6) Type diagno [Enter] from keyboard of PC.

Note 6-1 : When the KRM-220CAA is connected, the spindle motor rotates at a high speed. If the message “Diagnosis END!” appears, press the “RESET” button and stop the spindle.

Note 6-2 : When the KRM-220CAA is connected (i.e. when the FFC for optical laser unit is connected to CN101 is connected), ignore the message “AK8567 (w/o OP) check: NG”.

Confirm that “OK” is displayed in all items except for the cases as described above.

If “NG” is displayed in any item, it is assumed that the point indicated by the item in Fig. 3-16 is defective or its peripheral has abnormality. Perform the repair work again and repeat the self diagnosis. Repeat the repair work and self diagnosis until “OK” is displayed.

7) Perform the operation check.

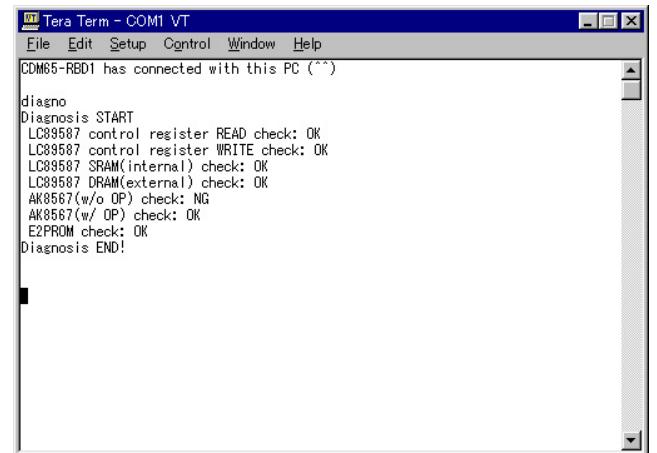
3-4. Use of Self Diagnosis Function-2

(In the case when result data of the past electrical adjustment, should be left saved.)

Perform the self diagnosis as described below in the case when the faulty point could not be identified even after completion of the repair work that is defined as “The repair work in which electrical adjustment is not required” in section “2. Repair Works That Require Electrical Adjustment”.

1) Select the menu as follows. Control → Macro, and select E2bkupF.ttl.

Press “Open”. (Fig. 3-17, 3-18)

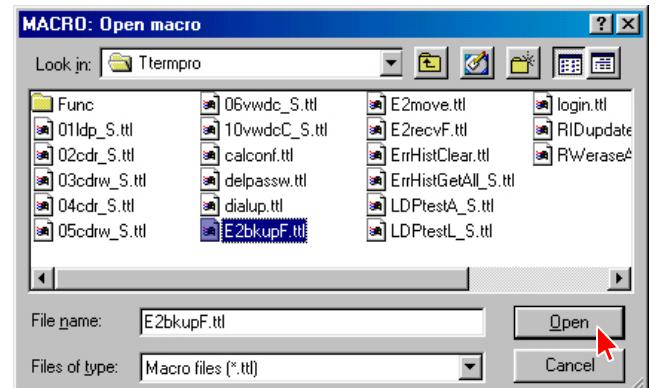


```
CDM65-RBD1 has connected with this PC (``)
diagno
Diagnosis START
LC89587 control register READ check: OK
LC89587 control register WRITE check: OK
LC89587 SRAM(internal) check: OK
LC89587 DRAM(external) check: OK
AK8567(w/o OP) check: NG
AK8567(w/o OP) check: OK
E2PROD check: OK
Diagnosis END!
```

▲ Fig. 3-16

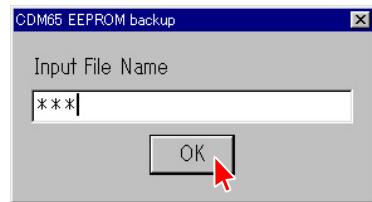


▲ Fig. 3-17



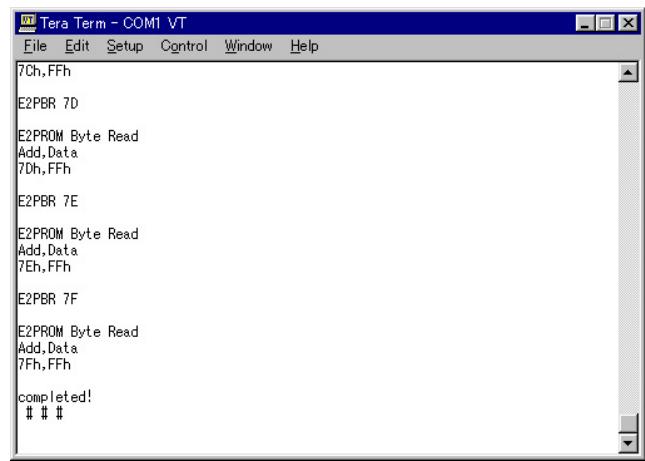
▲ Fig. 3-18

2) Type the filename in which result of electrical adjustment is going to be saved. Press “OK”. (Fig. 3-19)



▲ Fig. 3-19

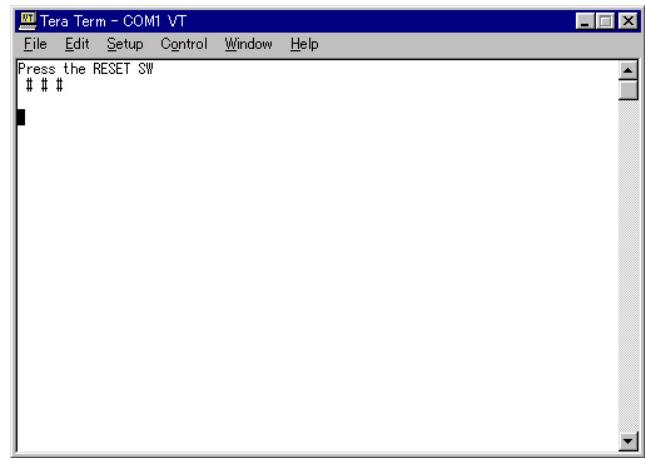
3) Confirm that the message “completed!” appears. The EEPROM data is backed up. (Fig. 3-20)



▲ Fig. 3-20

4) Perform step 1) through step 6) of section “3-3. Use of Self Diagnosis Function-1”.
5) Select the menu as follows. Control → Macro, and select E2recvF.ttl.
Press “Open”.

6) Press the “RESET” button (SW101) of the jig as prompted by the display. (Fig. 3-21)



▲ Fig. 3-21

7) Type the filename in which result of electrical adjustment is saved. Press “OK”. (Fig. 3-22)



▲ Fig. 3-22

8) Confirm that the message “completed!” appears.
The EEPROM data is recovered. (Fig. 3-23)

```

Tera Term - COM1 VT
File Edit Setup Control Window Help
7Ch,FFh
E2PBW ?D FF
E2PROM Byte Write
Add,Data
7Dh,FFh
E2PBW ?E FF
E2PROM Byte Write
Add,Data
7Eh,FFh
E2PBW ?F FF
E2PROM Byte Write
Add,Data
7Fh,FFh
completed!
# # #

```

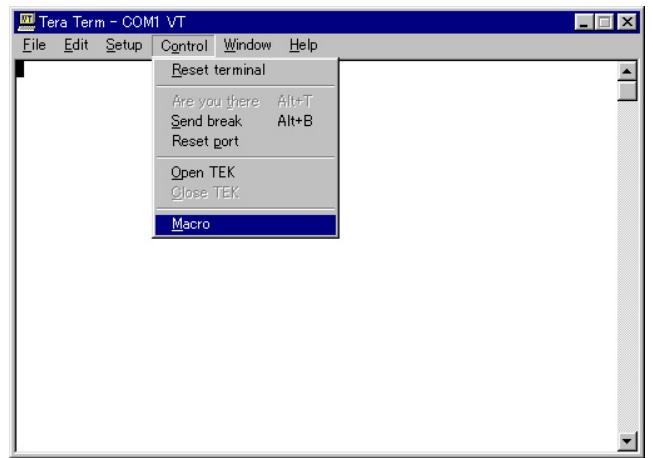
▲ Fig. 3-23

9) Perform the operation check.

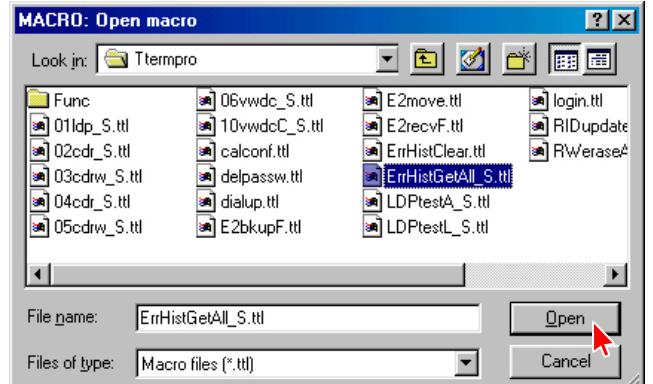
3-5. Acquisition of Error History and Acquisition of Elapsed Operating Hours

Check if error has occurred or not by performing the following steps. If error has occurred, it is interpreted and saved in the specific directory. Check contents of the error by viewing the specific directory as described below.

1) Select the menu as follows. Control → Macro, and select ErrHistGetAll_S.ttl.
Press “Open”. (Fig. 3-24, 3-25)

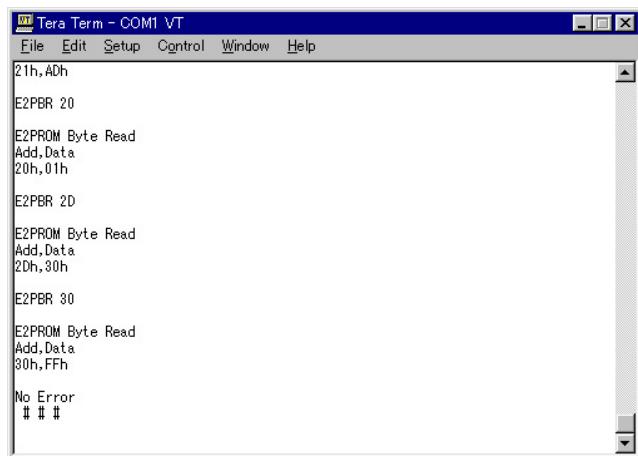


▲ Fig. 3-24



▲ Fig. 3-25

- 2) Press the “RESET” button (SW101) of the jig as prompted by the display.
- 3) When there is no error, the display as shown in Fig. 3-26 appears.



The screenshot shows a Tera Term window titled "Tera Term - COM1 VT". The log content is as follows:

```

21h,ADh
E2PBR 20
E2PROM Byte Read
Add,Data
20h,01h

E2PBR 2D
E2PROM Byte Read
Add,Data
20h,30h

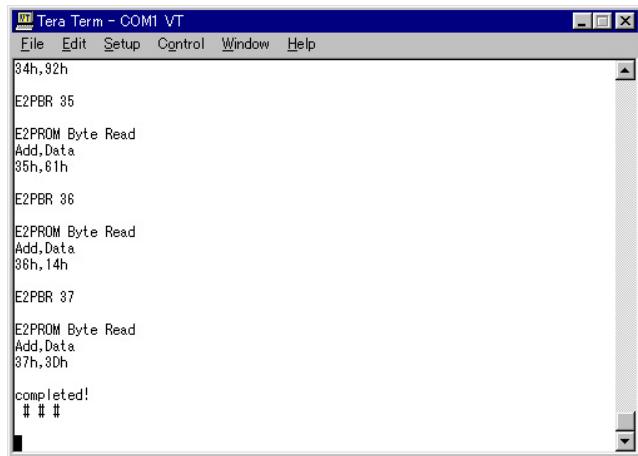
E2PBR 30
E2PROM Byte Read
Add,Data
30h,FFh

No Error
# # #

```

▲ Fig. 3-26

- 4) When error has occurred, the display as shown in Fig. 3-27 appears showing error history. Contents of the errors are displayed as shown in Fig. 3-28 after interpretation of the error log. Check the contents of the error by looking at the file “EEPROM_Errorlog.txt” in the TeraTermPro directory



The screenshot shows a Tera Term window titled "Tera Term - COM1 VT". The log content is as follows:

```

34h,92h
E2PBR 35
E2PROM Byte Read
Add,Data
35h,81h

E2PBR 36
E2PROM Byte Read
Add,Data
36h,14h

E2PBR 37
E2PROM Byte Read
Add,Data
37h,3Dh

completed!
# # #

```

▲ Fig. 3-27

- 5) The elapsed operating hours is shown at the top of “EEPROM_Errorlog.txt” regardless of presence/absence of the error history. Check the elapsed operating hours from the display as shown in Fig. 3-28.

```

SN = xxxx
Op elapsed time: 12:0:56
Spindle elapsed time: 17:9:44

***** Error Log data(0) *****
Error Pointer= 38
Error Code= 05,04,E0,00,00,01,0D,0D
Focus is dropped
1x speed
Servo wakeup
Lead In Start Time= 7:0:0
Laser Power= 0
ATIME= 1:13:13

***** Error Log data(-1) *****
Error Pointer= 30
Error Code= 05,04,E0,00,00,00,14,43
Focus is dropped
1x speed
Servo wakeup
Lead In Start Time= 7:0:0
Laser Power= 0
ATIME= 0:20:67

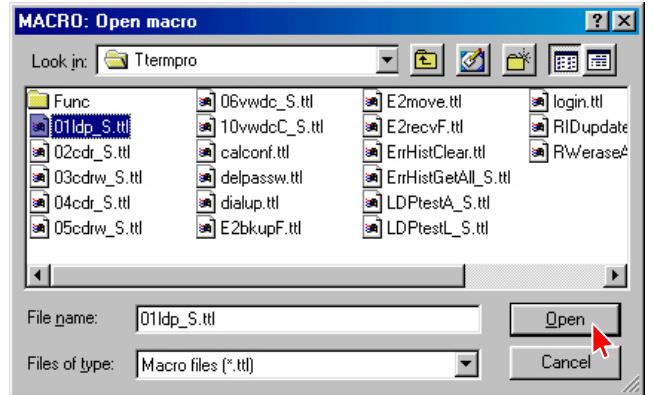
```

▲ Fig. 3-28 : Error log example

4. CDM65-RBD1 Electrical Adjustment

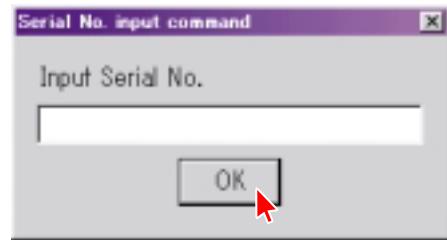
4-1. Laser Power Adjustment

- 1) Start up the TeraTermPro and set the switch S510 on the jig to “CONTROL”.
- 2) Select the menu as follows. Control → Macro, and select 01ldp_S.ttl.
Press “Open”. (Fig. 4-1)



▲ Fig. 4-1

- 3) Press the “RESET” button (SW101) of the jig as prompted by the display.
- 4) Press the “RESET” button (SW101) of the jig again as prompted by the display.
- 5) When the display as shown in Fig. 4-2 appears, type the serial number (see Fig. 4-3) that is printed on the label attached to the RBD1. (This dialog appears only when the EEPROM IC502 is replaced.)

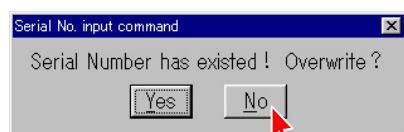


▲ Fig. 4-2



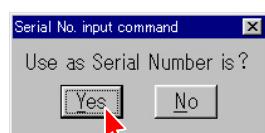
▲ Fig. 4-3

When the display as shown in Fig. 4-4 appears, press “No”.



▲ Fig. 4-4

When the display as shown in Fig. 4-5 appears after that, press “Yes”.



▲ Fig. 4-5

6) When the display as shown in Fig. 4-6 appears, place the probe of the laser power meter on top of the optical laser unit, and press "OK". (See Fig. 3-3-a, page 31)



▲ Fig. 4-6

7) When the display as shown in Fig. 4-7 appears, set the Range of a laser power meter to "1 mW" and press "OK".



▲ Fig. 4-7

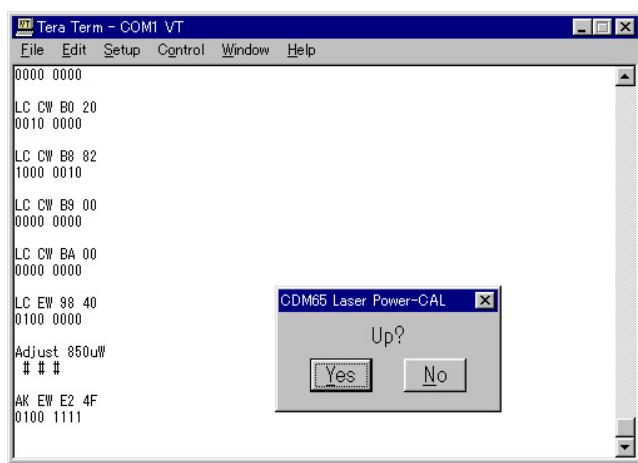
8) Adjust the laser output power as follows.

The laser output power (i.e., laser power meter reading) should satisfy the specification shown below.

LEADER LPM-8001 : 0.81 +/- 0.05 mW (0.76 to 0.86 mW)

- * To increase the laser output power
Press [Yes] of the "Up?" dialog box.
- * To decrease the laser output power
Press [No] of the "Up?" dialog box and then press [Yes] of the "Down?" dialog box.

Repeat until the laser output power satisfies the specification. (Fig. 4-8, 4-9)



▲ Fig. 4-8

* When the setting value is determined

Press [No] of the "Up?" dialog box
and then press [No] of the "Down?" dialog box
and press [Yes] of the "Save?" dialog box. (Fig. 4-10)



▲ Fig. 4-9

9) When the display shown in Fig. 4-11 appears, set the Range of a laser power meter to "10 mW" and press "OK".



▲ Fig. 4-10



▲ Fig. 4-11

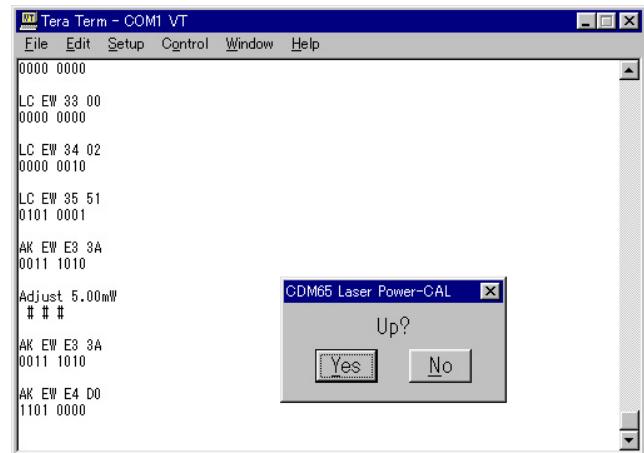
10) Adjust the laser output power as follows.

The laser output power (i.e., laser power meter reading) should satisfy the specification shown below.

LEADER LPM-8001 : 4.6 +/- 0.1 mW (4.5 to 4.7 mW)

- * To increase the laser output power
Press [Yes] of the “Up?” dialog box.
- * To decrease the laser output power
Press [No] of the “Up?” dialog box
and then press [Yes] of the “Down?” dialog box.

Repeat until the laser output power satisfies the specification.
(Fig. 4-12, 4-13)



▲ Fig. 4-12



▲ Fig. 4-13

- * When the setting value is determined
Press [No] of the “Up?” dialog box
and then press [No] of the “Down?” dialog box
and press [Yes] of the “Save?” dialog box. (Fig. 4-14)



▲ Fig. 4-14

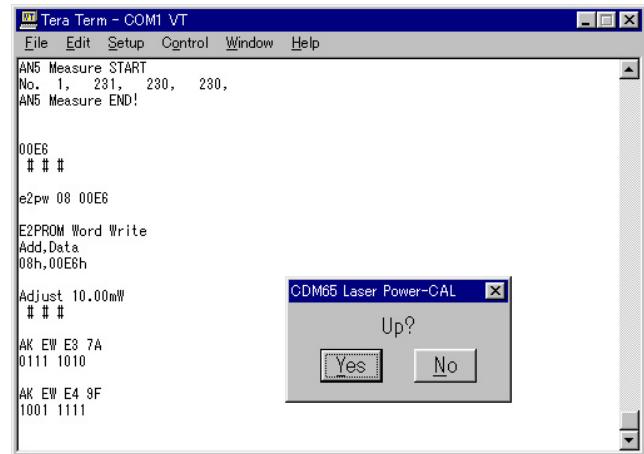
11) Adjust the laser output power as follows.

The laser output power (i.e., laser power meter reading) should satisfy the specification shown below.

LEADER LPM-8001 : 9.4 +/- 0.2 mW (9.2 to 9.6 mW)

- * To increase the laser output power
Press [Yes] of the “Up?” dialog box.
- * To decrease the laser output power
Press [No] of the “Up?” dialog box
and then press [Yes] of the “Down?” dialog box.

Repeat until the laser output power satisfies the specification.
(Fig. 4-15, 4-16)



▲ Fig. 4-15



▲ Fig. 4-16

- * When the setting value is determined
Press [No] of the “Up?” dialog box
and then press [No] of the “Down?” dialog box
and press [Yes] of the “Save?” dialog box. (Fig. 4-17)



▲ Fig. 4-17

12) When the display shown in Fig. 4-18 appears, remove probe of the laser power meter and press OK.



▲ Fig. 4-18

13) Check that the message "Laser Power CAL completed!" appears. (Fig. 4-19)
NG Judgment Result Indication

```

Tera Term - COM1 VT
File Edit Setup Control Window Help
Add,Data 0Ah,013Ah
d= 0.060[OK]
# # #
SLEDIN
SLEDIN END!

STOP
<STOP COMMAND RECEIVED>
<STOPPED>

SLEDIN
SLEDIN END!

TOPNCLS
[OPEN START]
Tray OPEN
Laser Power CAL completed!
# # #

```

▲ Fig. 4-19

4-1-1. Sled Speed NG!

Contents : This message appears when the movement performance of sled is outside the specification.

Measure : Check if there is any abnormality in the sled drive circuit (IC171 peripheral) and the sled drive mechanism.

4-1-2. Power CAL NG!

Contents : This message appears when the laser emission intensity is outside the specification.

Measure : Check peripheral of CN101.

Replace KRM-220CAA.

4-2. CD/CD-R Playback Adjustment

1) Select the menu as follows. Control → Macro, and select 02cdr_S.ttl.
Press "Open".

2) Place the test CD disc PATD-012 on the tray as prompted by the display and press "OK". (Fig. 4-20)



▲ Fig. 4-20

3) Press the "RESET" button (SW101) of the jig as prompted by the display.

4) As prompted by the message shown in Fig. 4-21, check that the waveform as shown in Fig. 4-22 appears on an oscilloscope.

```

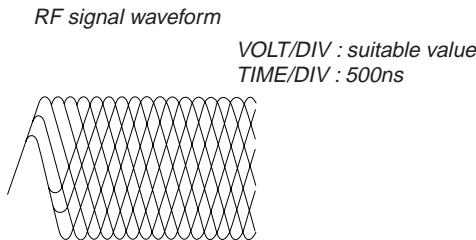
Tera Term - COM1 VT
File Edit Setup Control Window Help
FBIASADJ
Focus Bias Adjust START
< 0xE800h:1.662V
< 1xEC00h:2.009V
< 2xF000h:2.297V
< 3xF400h:2.488V
< 4xF800h:2.639V
< 5xFC00h:2.757V
< 6x0000h:2.801V
< 7x0400h:2.815V
< 8x0800h:2.805V
< 9x0C00h:2.747V
< 10x1000h:2.678V
< 11x1400h:2.581V
< 12x1800h:2.489V
[204h = 0400h]
Focus Bias Adjust END!

->Check the Waveform!
# # #

```

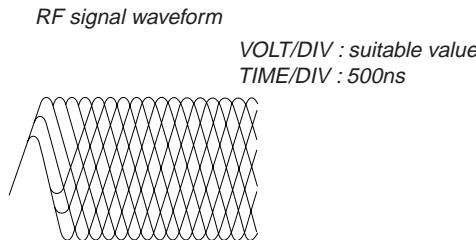
▲ Fig. 4-21

Note :The clear RF signal waveform means that the shape “◇” can be clearly distinguished at the center of the waveform.



▲ Fig. 4-22

5) As prompted by the message shown in Fig. 4-24, check that the waveform as shown in Fig. 4-23 appears on an oscilloscope.



▲ Fig. 4-23

Tera Term - COM1 VT

File Edit Setup Control Window Help

```
->Check the Waveform!
# # #

RFACCHK
RFAC Check START
[OK: 1.124V]
RFAC Check END!

AMS 01
AMS End!

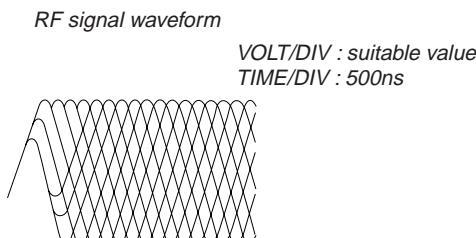
AK EW FE 08
0000 1000

->Read out Jitter Meter
# # #

< 30 nsec (PATD-012 TNO:01)
# # #
```

▲ Fig. 4-24

6) As prompted by the message shown in Fig. 4-26, check that the waveform as shown in Fig. 4-25 appears on an oscilloscope.



▲ Fig. 4-25

Tera Term - COM1 VT

File Edit Setup Control Window Help

```
BLER
Block Error Monitor START
< 0s>
C1:0000 C2:0000
Block Error Monitor END!

BLER [OK]
# # #

AMS 20
AMS End!

AK EW FE 08
0000 1000

->Read out Jitter Meter
# # #

< 30 nsec (PATD-012 TNO:20)
# # #
```

▲ Fig. 4-26

7) Check that the message “CDR PB-CAL completed!” appears.

NG Judgment Result Indication

4-2-1. Playback Measurement NG!

Contents : This message appears when the BLER (Block Error Rate) during playback is outside the specification.

Measure : Check if there is any abnormality in RBD1.

Replace KRM-220CAA.

4-3. CD-RW Playback Adjustment

- 1) Select the menu as follows. Control → Macro, and select 03cdr_S.ttl. Press “Open”.
- 2) Place the test CD TCD-W091W on the tray as prompted by the display and press “OK”. (Fig. 4-27)

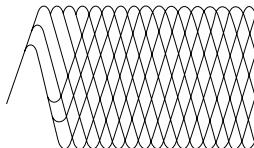


▲ Fig. 4-27

- 3) Press the “RESET” button (SW101) of the jig as prompted by the display.
- 4) As prompted by the message shown in Fig. 4-29, check that the waveform as shown in Fig. 4-28 appears on an oscilloscope.

RF signal waveform

VOLT/DIV : suitable value
TIME/DIV : 500ns

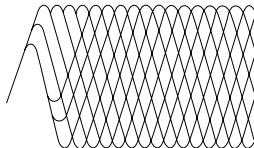


▲ Fig. 4-28

- 5) As prompted by the message shown in Fig. 4-31, check that the waveform as shown in Fig. 4-30 appears on an oscilloscope.

RF signal waveform

VOLT/DIV : suitable value
TIME/DIV : 500ns

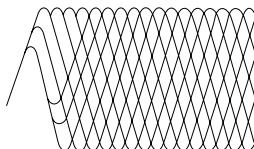


▲ Fig. 4-30

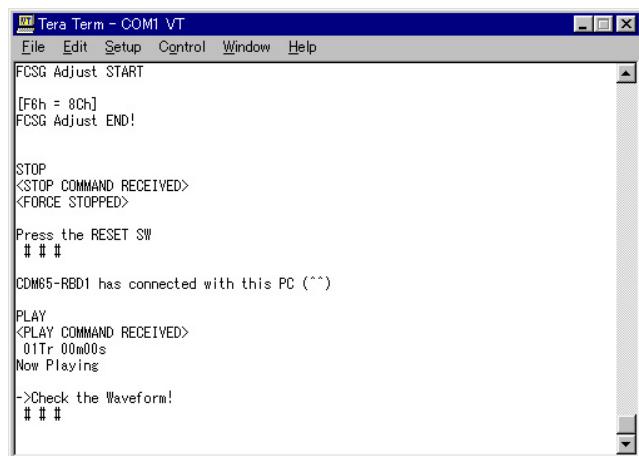
- 6) As prompted by the message shown in Fig. 4-33, check that the waveform as shown in Fig. 4-32 appears on an oscilloscope.

RF signal waveform

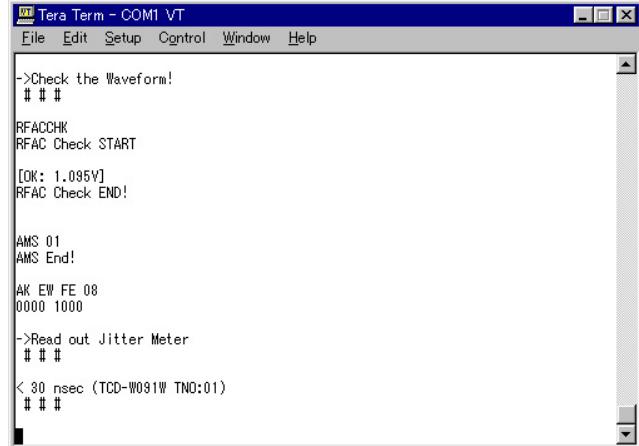
VOLT/DIV : suitable value
TIME/DIV : 500ns



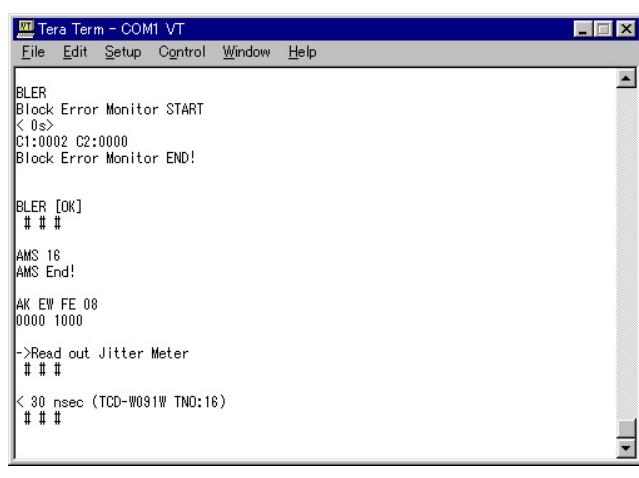
▲ Fig. 4-32



▲ Fig. 4-29



▲ Fig. 4-31



▲ Fig. 4-33

7) Check that the message “CDRW PB-CAL completed!” appears. (Fig. 4-34)

NG Judgment Result Indication

▲ Fig. 4-34

4-3-1. Playback Measurement NG!

Contents: This message appears when the BLER (Block Error Rate) during playback is outside the specification.
Measure : Check if there is any abnormality in RBD1.

Replace KRM-220CAA.

4-4. CD-R Recording Adjustment and Self Record/Playback Check

1) Select the menu as follows. Control → Macro, and select 04cdr_S.ttl.
Press “Open”.

2) Place the test CD disc PATD-012 on the Deck A. Place the recording CD-R disc (see Note: 4-4-1) on the tray (Deck B) as prompted by the display and press “OK”. (Fig. 4-35)

Note : 4-4-1

The disc to be used in this step.

- * Use the CD-R disc CRM74 for audio, that is manufactured by Sony.
- * The disc that is used by this step cannot be used for the general purposes and for the purpose of operation check of the RCD series equipment. The disc that is used for the general purposes or for the purpose of operation check of the RCD series equipment, cannot be used in this step.
- * If the recording is interrupted by any reasons during the recording operation (i.e., the WRITE POWER ON LED of the jig is lighting), the disc cannot be used any more in the subsequent step. Use the un-used brand new disc and repeat this step from the very beginning again.

3) When the disc that is used in step 2) is the disc that has been used in the electrical adjustment in the past. Press “Yes”.

When the disc that is used in step 2) is a completely blank disc. Press “No”. (Fig. 4-36)

Note: The recording CD-R disc can be used only for the electrical adjustment. The recording CD-R disc must be controlled so that it must not be used for any other applications.

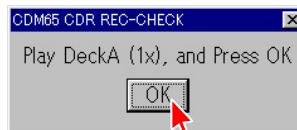


▲ Fig. 4-35



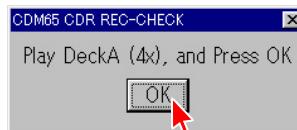
▲ Fig. 4-36

4) Press the  button of Deck A. After playback starts, press "OK". (Fig. 4-37)



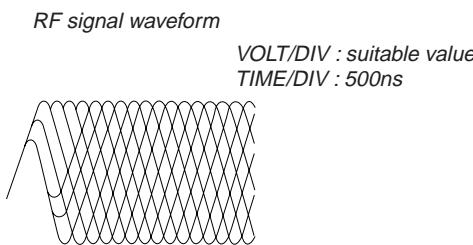
▲ Fig. 4-37

5) When the message as shown in Fig. 4-38 appears some seconds later, select 4x of the test mode (refer to page 22, Play Speed Selection Mode (Deck A)) PLAYBACK SPEED. Then press the  button of Deck A. After playback starts, press "OK".



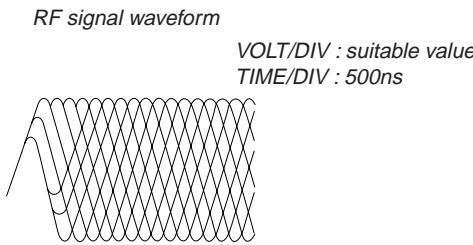
▲ Fig. 4-38

6) As prompted by the message shown in Fig. 4-40, check that the waveform as shown in Fig. 4-39 appears on an oscilloscope.

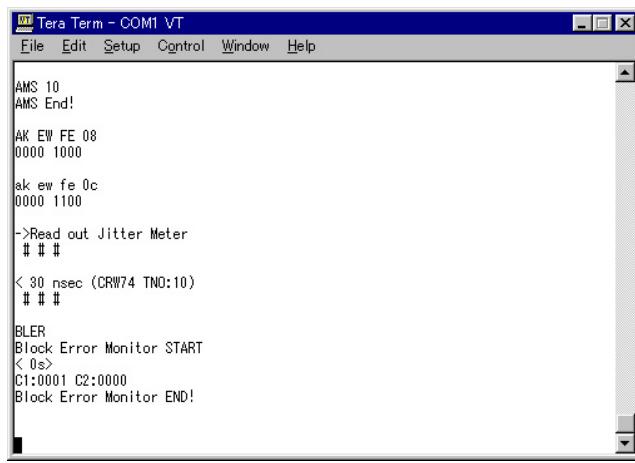


▲ Fig. 4-39

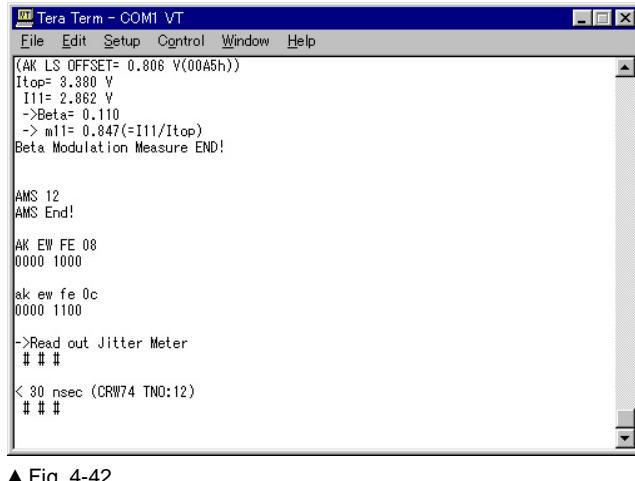
7) As prompted by the message shown in Fig. 4-42, check that the waveform as shown in Fig. 4-41 appears on an oscilloscope.



▲ Fig. 4-41



▲ Fig. 4-40



▲ Fig. 4-42

8) Check that the message "CDR REC-CHECK completed!" appears.
NG Judgment Result Indication

4-4-1. CD-R Playback Measurement NG!

Contents : This message appears when the BLER (Block Error Rate) *Beta/m11 of the track that is recorded and played back, is outside the specification.

Measure : Check if there is any abnormality in RBD1.
Replace KRM-220CAA.

4-5. CD-RW Recording Adjustment and Self Record/Playback Check

1) Select the menu as follows. Control → Macro, and select 05cdrw_S.ttl.
Press “Open”.

2) Place the test CD disc PATD-012 on the Deck A. Place the recording CD-RW disc (see Note: 4-5-1) on the tray (Deck B) as prompted by the display and press “OK”. (Fig. 4-43)

Note : 4-5-1

The disc to be used in this step.

- * Use the CD-RW disc CWM74 for audio, that is manufactured by Sony.
- * The disc that is used by this step cannot be used for the general purposes and for the purpose of operation check of the RCD series equipment as it is. The disc that is used for the general purposes or for the purpose of operation check of the RCD series equipment, cannot be used in this step.
When you want to use the CD-RW disc for other applications, erase the CD-RW disc.
- * If the recording is interrupted by any reasons during the recording operation (i.e., the WRITE POWER ON LED of the jig is lighting), the disc cannot be used any more in the subsequent step. In such a case, erase the CD-RW disc and repeat this step from the very beginning again.

3) When the disc that is used in step 2) is the disc that has been used in the electrical adjustment in the past..... Press “Yes”.

When the disc that is used in step 2) is a completely blank disc.
..... Press “No”. (Fig. 4-44)

Note: The recording CD-RW disc can be used only for the electrical adjustment. The recording CD-RW disc must be controlled so that it must not be used for any other applications.

4) Press the  button of Deck A. After playback starts, press “OK”. (Fig. 4-45)



▲ Fig. 4-43



▲ Fig. 4-44



▲ Fig. 4-45



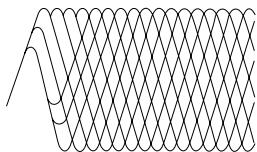
▲ Fig. 4-46

5) When the message as shown in Fig. 4-46 appears some seconds later, select 4x of the test mode (refer to page 22, Play Speed Selection Mode (Deck A)) PLAYBACK SPEED. Then press the  button of Deck A. After playback starts, press “OK”.

6) As prompted by the message shown in Fig. 4-48, check that the waveform as shown in Fig. 4-47 appears on an oscilloscope.

RF signal waveform

VOLT/DIV : suitable value
TIME/DIV : 500ns



▲ Fig. 4-47

```
■ Tera Term - COM1 VT
File Edit Setup Control Window Help
(OK LS OFFSET= 0.762 V(009Ch))
Itop= 2.783 V
I11= 1.762 V
->Beta= 0.046
-> m11= 0.633 (=I11/Itop)
Beta Modulation Measure END!

AMS 03
AMS End!

AK EW FE 08
0000 1000
ak ew fe 0c
0000 1100
->Read out Jitter Meter
# # #
< 30 nsec (CWM74 TNO:03)
# # #

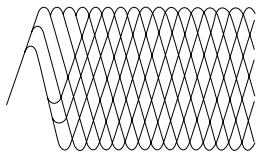
■
```

▲ Fig. 4-48

7) As prompted by the message shown on display, check that the waveform as shown in Fig. 4-49 appears on an oscilloscope.

RF signal waveform

VOLT/DIV : suitable value
TIME/DIV : 500ns



▲ Fig. 4-49

8) Check that the message “CDRW REC-CHECK completed!” appears. (Fig. 4-50)

NG Judgment Result Indication

```
■ Tera Term - COM1 VT
File Edit Setup Control Window Help
TMPMEASU
Temperature Measure START
TEMP = 1.676 V (converted in 5V)
= 36.3 degree Celsius
Temperature Measure END!

STOP
<STOP COMMAND RECEIVED>
<PLAY STOPPED>

SLEDIN
SLEDIN END!

TOPNCLS
[OPEN START]
Tray OPEN
CDRW REC-CHECK completed!
# # #

■
```

▲ Fig. 4-50

4-5-1. CD-RW Playback Measurement NG!

Contents : This message appears when the BLER (Block Error Rate) *Beta/m11 of the track that is recorded and played back, is outside the specification.

Measure : Check if there is any abnormality in RBD1.
Replace KRM-220CAA.

4-6. VWDC Check

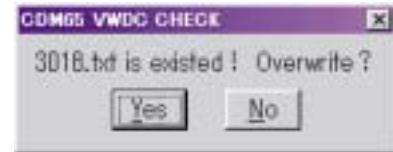
- 1) Select the menu as follows. Control → Macro, and select 06vwdc_S.ttl.
Press “Open”.
- 2) As prompted by the message shown in Fig. 4-51, remove the disc from the tray and press “OK”.



▲ Fig. 4-51

- 3) Because this step saves the result of electrical adjustment in a file, there can be a case that the dialog as shown in Fig. 4-52 appears.

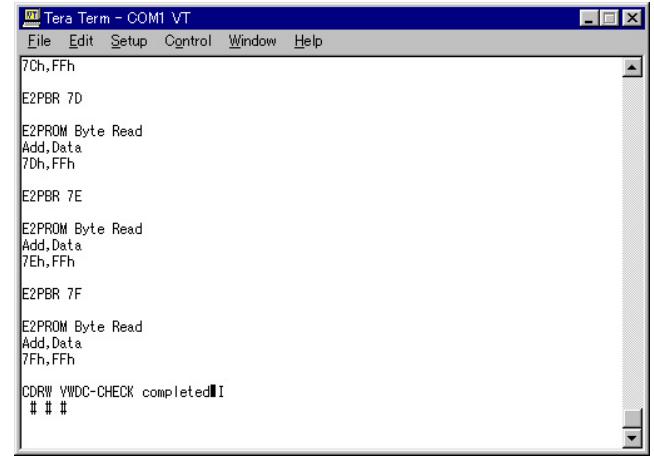
When you want to overwrite Press “Yes”.
When you want to create a new file Press “No”.



▲ Fig. 4-52

- 4) Check that the message “CDRW VWDC-CHECK completed!” appears. (Fig. 4-53)

NG Judgment Result Indication



▲ Fig. 4-53

4-6-1. EEPROM Write NG!

Contents : This message appears when writing data into EEPROM fails.

Measure : When the steps of 01ldp_S.ttl through 05cdrw_S.ttl have no problem and the error occurs only in this step, it is assumed that an error has occurred momentarily in the interface between PC and CDM65. Therefore, repeat execution of 06vwdc_S.ttl again.

4-6-2. VWDC judge [Line Top - End] [NG]

Contents : This message appears when the VWDC value is outside the specification.

Measure : It is assumed that the optical laser unit has deteriorated. If this error occurs after the KRM-220CAA is replaced, the adjustment error in the step of 01ldp_S.ttl is assumed. Therefore, repeat execution of steps of 01ldp_S.ttl through 05cdrw_S.ttl again. In the cases other than above, check if the laser power adjustment is correctly performed or not, using LDTestL_S.ttl.

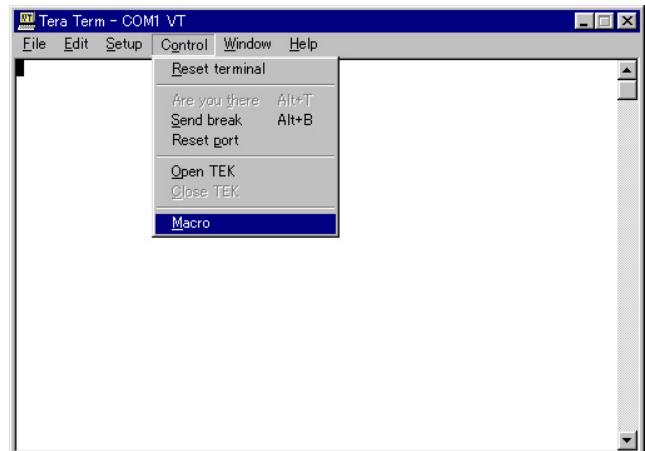
4-7. NG Message List

Message	Cause
Tray OPEN NG!	The tray has not opened within the specified time.
Tray Close NG!	The tray has not closed within the specified time.
SLEDIN NG!	The sled has not moved toward inner circumference within the specified time.
SLEDOUT NG!	The sled has not moved toward outer circumference within the specified time.
RIDR NG!	The RID information could not be read out within the specified time.
SNread (1) NG!	The SN (1) information could not be read out within the specified time.
SNread (2) NG!	The SN (2) information could not be read out within the specified time.
SNread (3) NG!	The SN (3) information could not be read out within the specified time.
FBIASADJ NG!	The Focus Bias Adjustment has not completed within the specified time.
FEOSADJ NG!	The FE Offset Adjustment has not completed within the specified time.
FESAMPADJ NG!	The FE Amplitude Adjustment has not completed within the specified time.
RFACCHK NG!	The RFAC amplitude is abnormal or the adjustment has not completed within the specified time.
RPINWADJ1 NG!	The Read Power (during Write1) Adjustment has not completed within the specified time.
RPINWADJ2 NG!	The Read Power (during Write2) Adjustment has not completed within the specified time.
SERVOSET NG!	The Servo Setting has not completed within the specified time.
TSa NG!	The ATIME Search has not completed within the specified time.
PLAYSW NG!	The Play operation has not started within the specified time.
STOP NG!	The Stop operation has not completed within the specified time.
AMS NG!	The AMS operation has not completed within the specified time.
ATIPPLAY NG!	The ATIP Play operation has not started within the specified time.
END TNO get NG!	The record-end track information could not be obtained within the specified time.
LEADOUT info.get NG!	The record-end time information could not be obtained within the specified time.
Invalid EndTrackNo./LeadoutTime !	The illegal record-end track and its time information were obtained.
Use the Blank disc	The disc exceeding the allowable limit is used.
DIR unlock!	The equipment could not be synchronized with the signal connected to DIN2.
RWP NG!	The CD-R Write Power setting has not completed within the specified time.
RWWP NG!	The CD-RW Write Power setting has not completed within the specified time.
REC NG!	The record operation could not be started within the specified time.

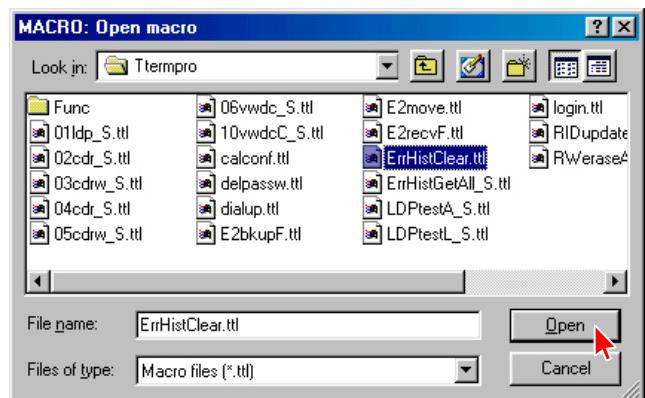
5. Operation Check

5-1. Erasing the Error History

- 1) Select the menu as follows. Control → Macro, and select ErrHistClear.ttl.
Press “Open”. (Fig. 5-1, 5-2)

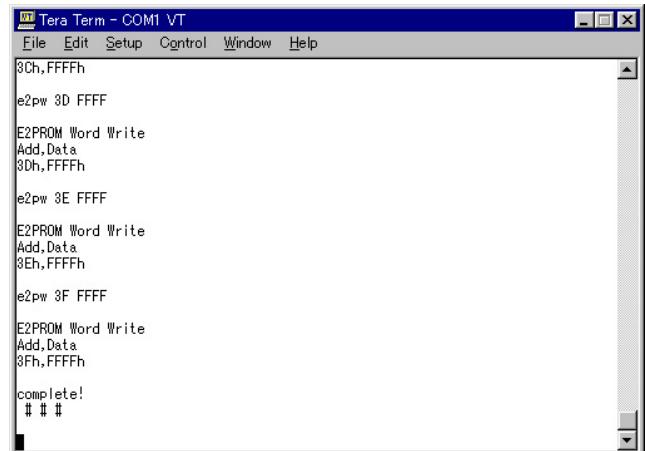


▲ Fig. 5-1



▲ Fig. 5-2

- 2) Press the “RESET” button (SW101) of the jig as prompted by the display.
- 3) Check that the message “completed!” appears. (Fig. 5-3)



▲ Fig. 5-3

5-2. Playback Check using TCD-W032W

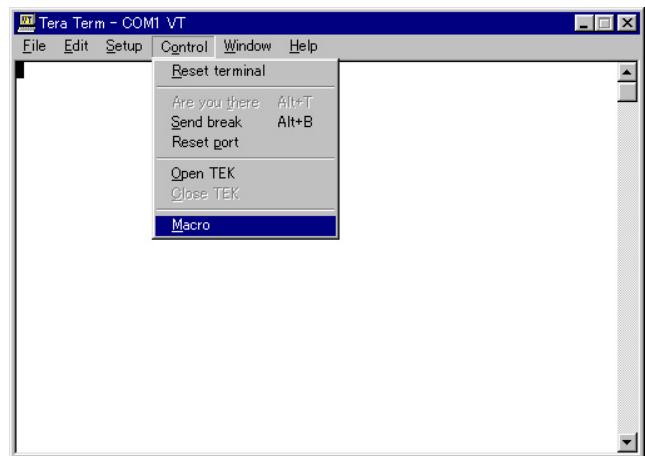
- 1) Install the CDM65 in the equipment and install the TCD-W032W in Deck B.
- 2) Rotate the  (Deck B) knob to select the track 16. Start playback by pressing the same knob or by pressing the  (Deck B) button.
- 3) Perform playback for 10 seconds or more and confirm that there is no abnormality such as sound skipping and others.

Supplementary Information

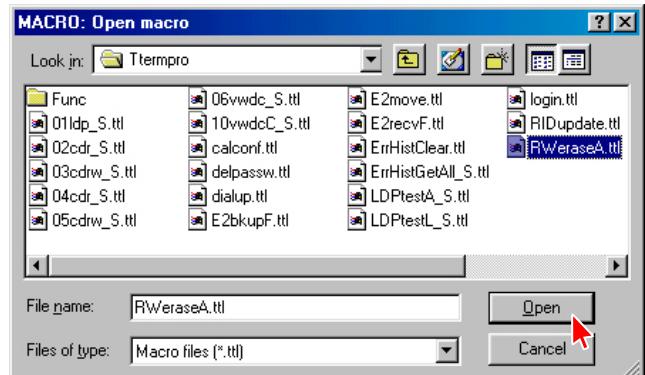
Method to Erase the CD-RW Disc

- * Erase it in the following procedure, to reuse the CD-RW disc to electrical adjustment, or to use a disc other than blank.
- * Be sure to erase it in the following procedure, to use the disc used for electrical adjustment for other uses.

- 1) Select the menu as follows. Control → Macro, and select RWeraseA.ttl.
Press “Open”. (Fig. A-1, A-2)

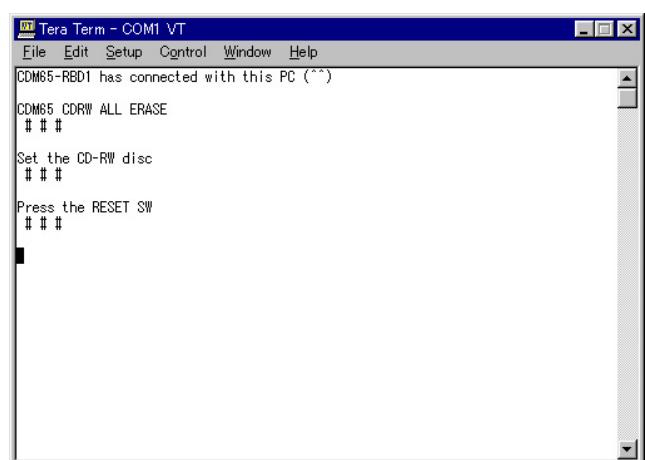


▲ Fig. A-1



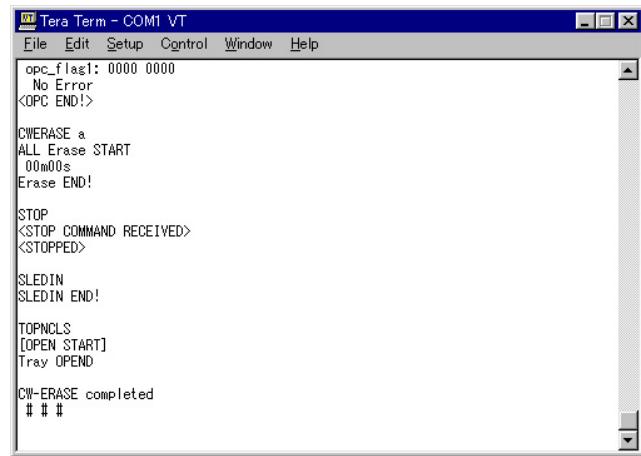
▲ Fig. A-2

- 2) Press the “RESET” button (SW101) of the jig as prompted by the display. (Fig. A-3)



▲ Fig. A-3

3) Check that the time display as shown by the arrow mark in Fig. A-4 is updated after a while.



```
opc_flag1: 0000 0000
No Error
<OPC END!>

CWERASE a
ALL Erase START
00m00s
Erase END!

STOP
<STOP COMMAND RECEIVED>
<STOPPED>

SLEDIN
SLEDIN END!

TOPNCLS
[OPEN START]
Tray OPEN

CW-ERASE completed
# # #
```

▲ Fig. A-4

4) When update of time display is stopped and rotation of spindle is stopped, press the STOP button (SW501) of the Jig, and then press the EJECT button (SW508) of the jig to remove the disc.

SECTION 6

DIAGRAMS

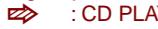
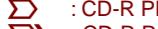
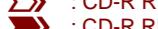
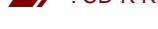
THIS NOTE IS COMMON FOR PRINTED WIRING
BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this necessary note is printed in
each block.)

For schematic diagrams.

Note:

- All capacitors are in μ F unless otherwise noted. p : pF. 50 WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and 1/4 W or less unless otherwise specified.
- \triangle : internal component.
- : panel designation.

Note: The components identified by mark \triangle or dotted line with mark \triangle are critical for safety. Replace only with part number specified.	Note: Les composants identifiés par une marque \triangle sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.
---	---

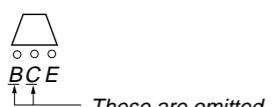
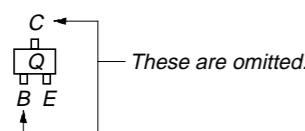
- : B+ Line.
- : B- Line.
- : adjustment for repair.
- Voltages and waveforms are dc with respect to ground under no-signal (detuned) conditions.
No mark : STOP
- Voltages are taken with a VOM (Input impedance 10 M Ω).
Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with an oscilloscope.
Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
-  : CD PLAY
-  : CD-R PLAY (ANALOG OUT)
-  : CD-R REC (ANALOG IN)
-  : CD-R REC (CD)

For printed wiring boards.

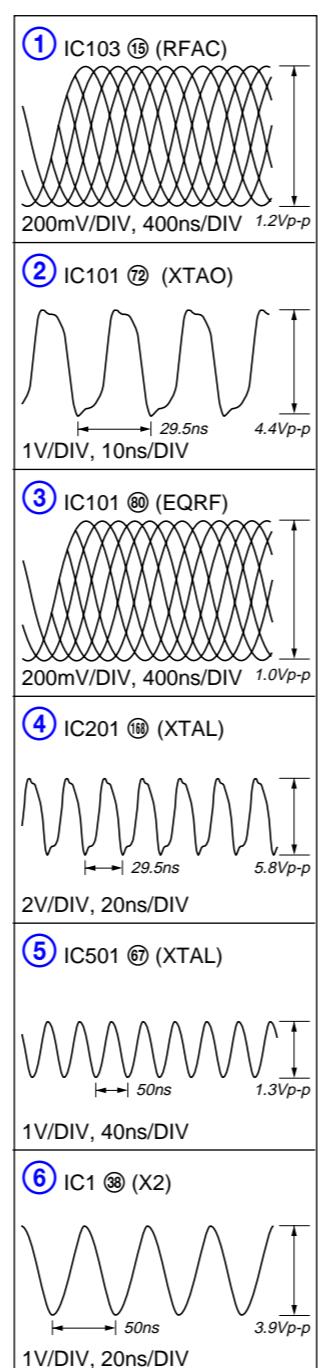
Note:

- : parts extracted from the component side.
- : parts extracted from the conductor side.
- : Through hole.
- : Pattern from the side which enables seeing.
(The other layers' patterns are not indicated.)

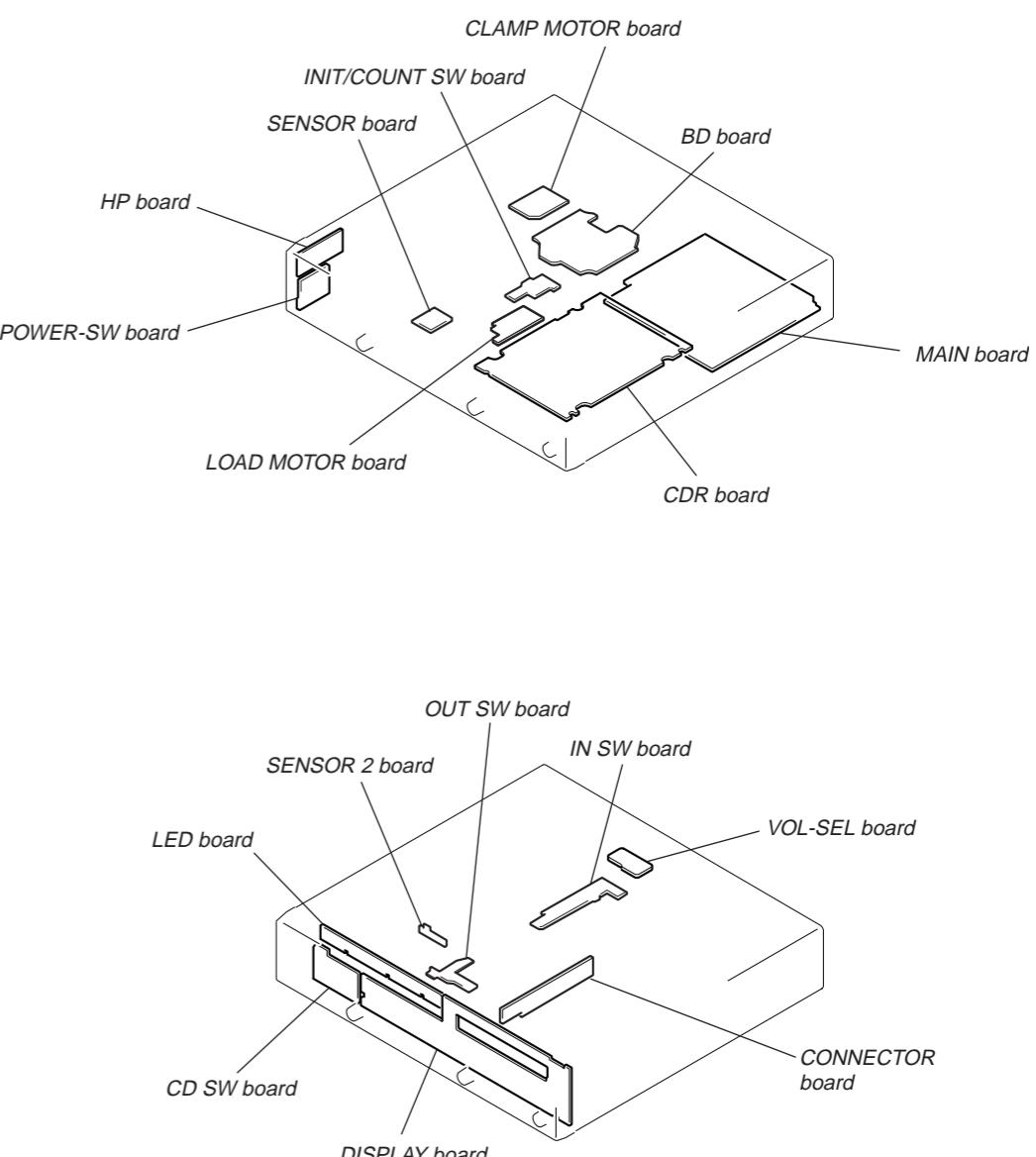
Indication of transistor



• Waveform

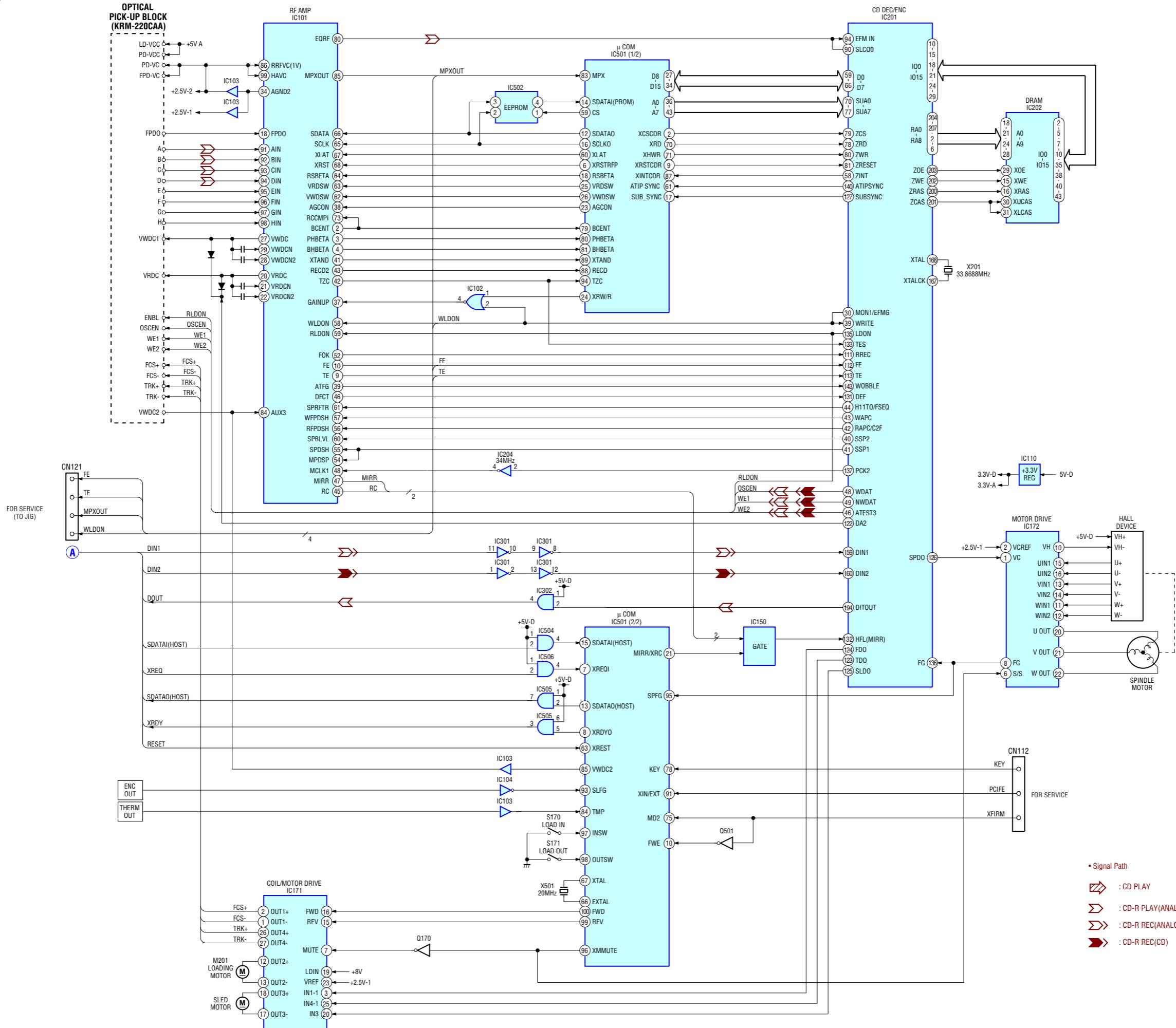


• Circuit Board Location

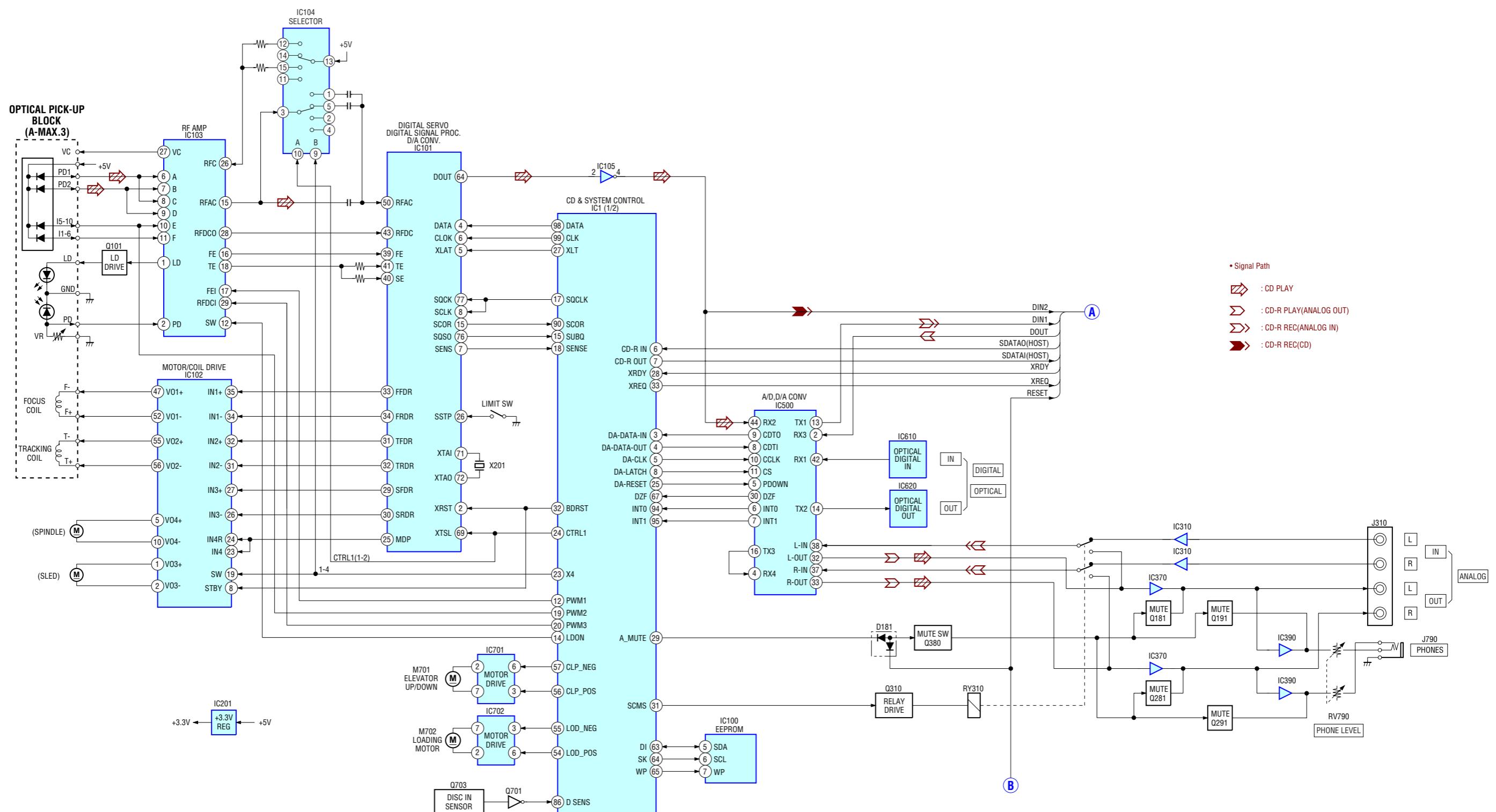


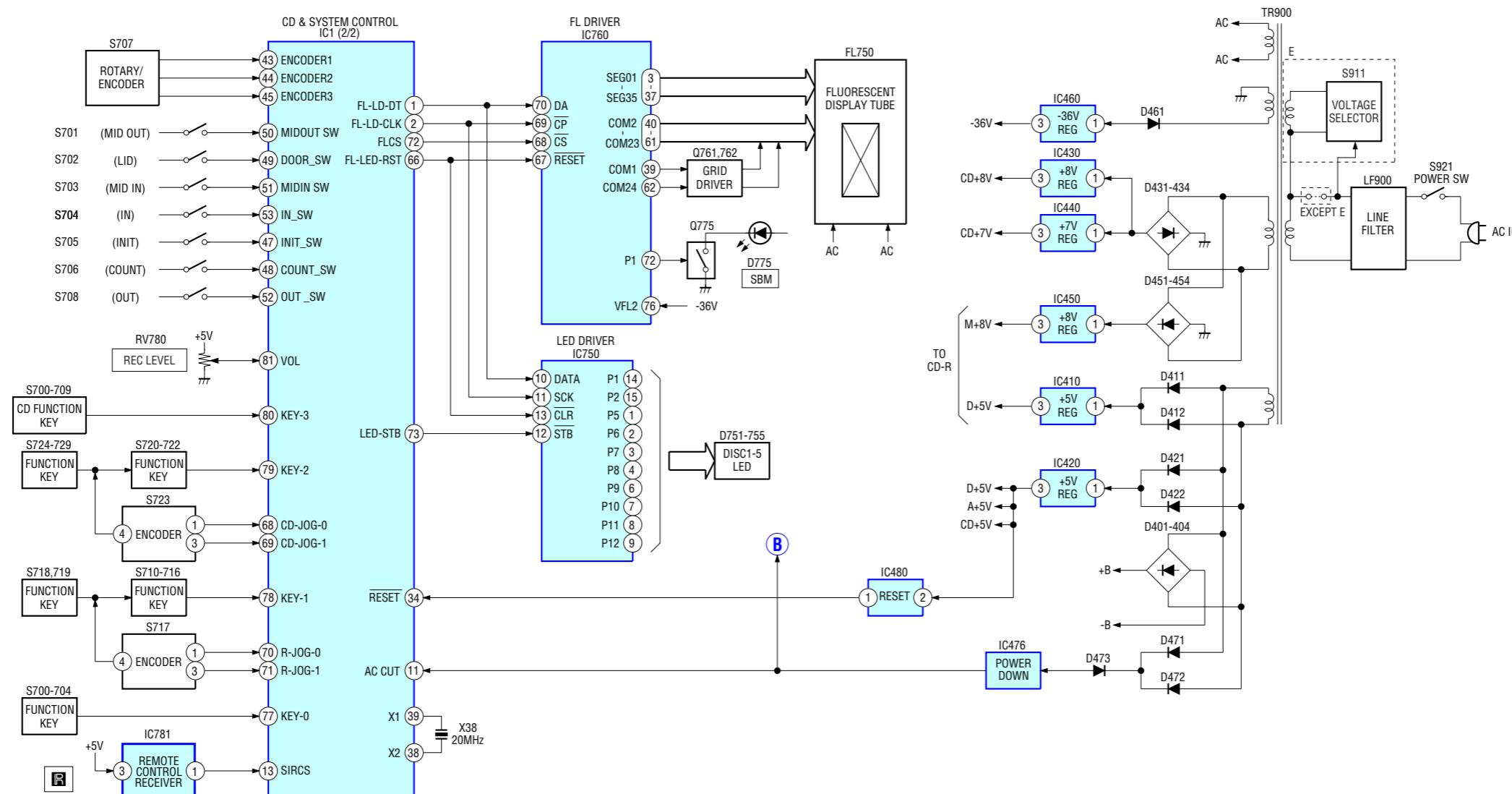
Caution:	
Pattern face side:	Parts on the pattern face side seen from the pattern face are indicated.
Parts face side:	Parts on the parts face side seen from the parts face are indicated.

6-1. Block Diagrams – CD-R Section –

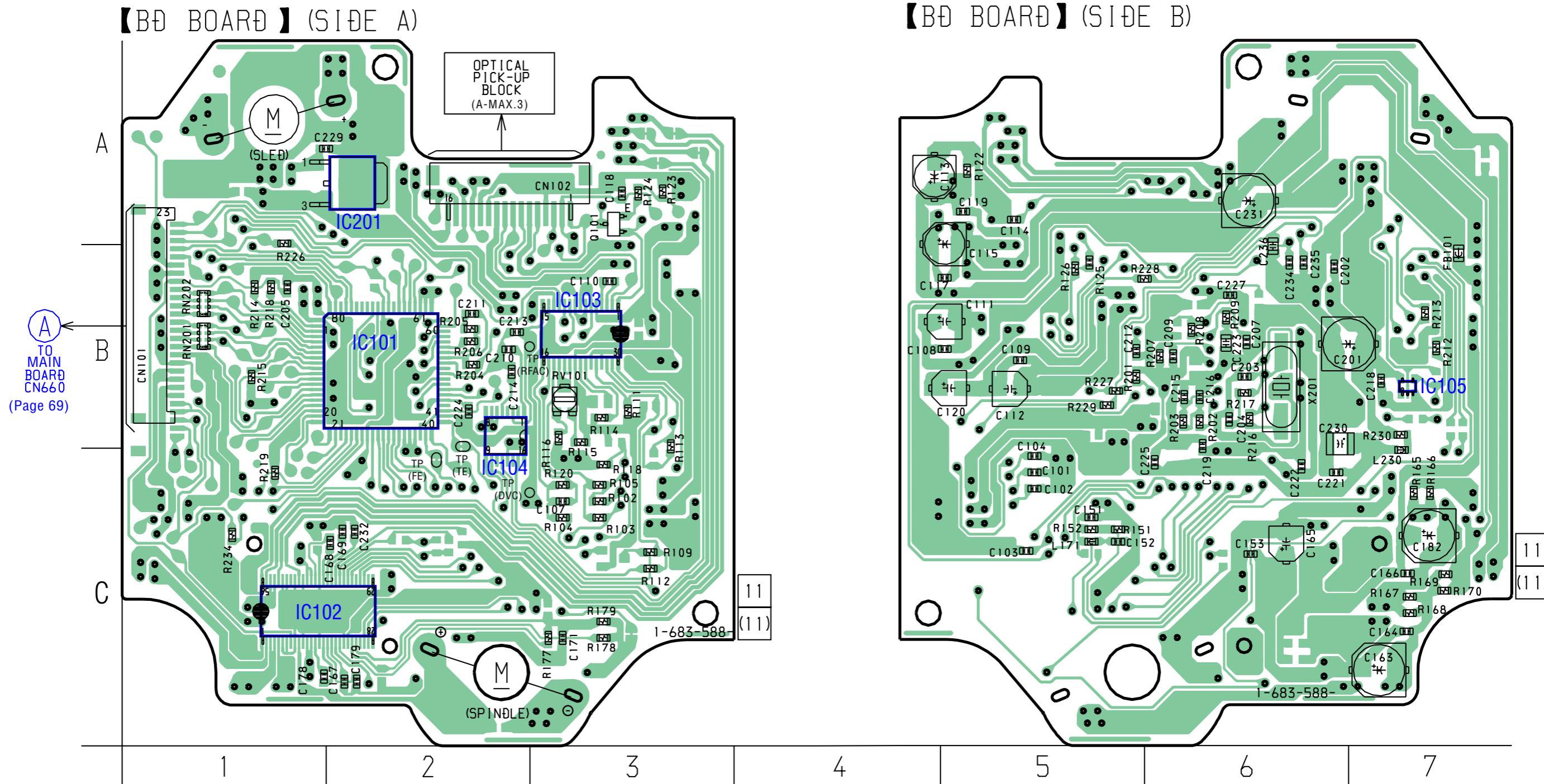


– CD Section –





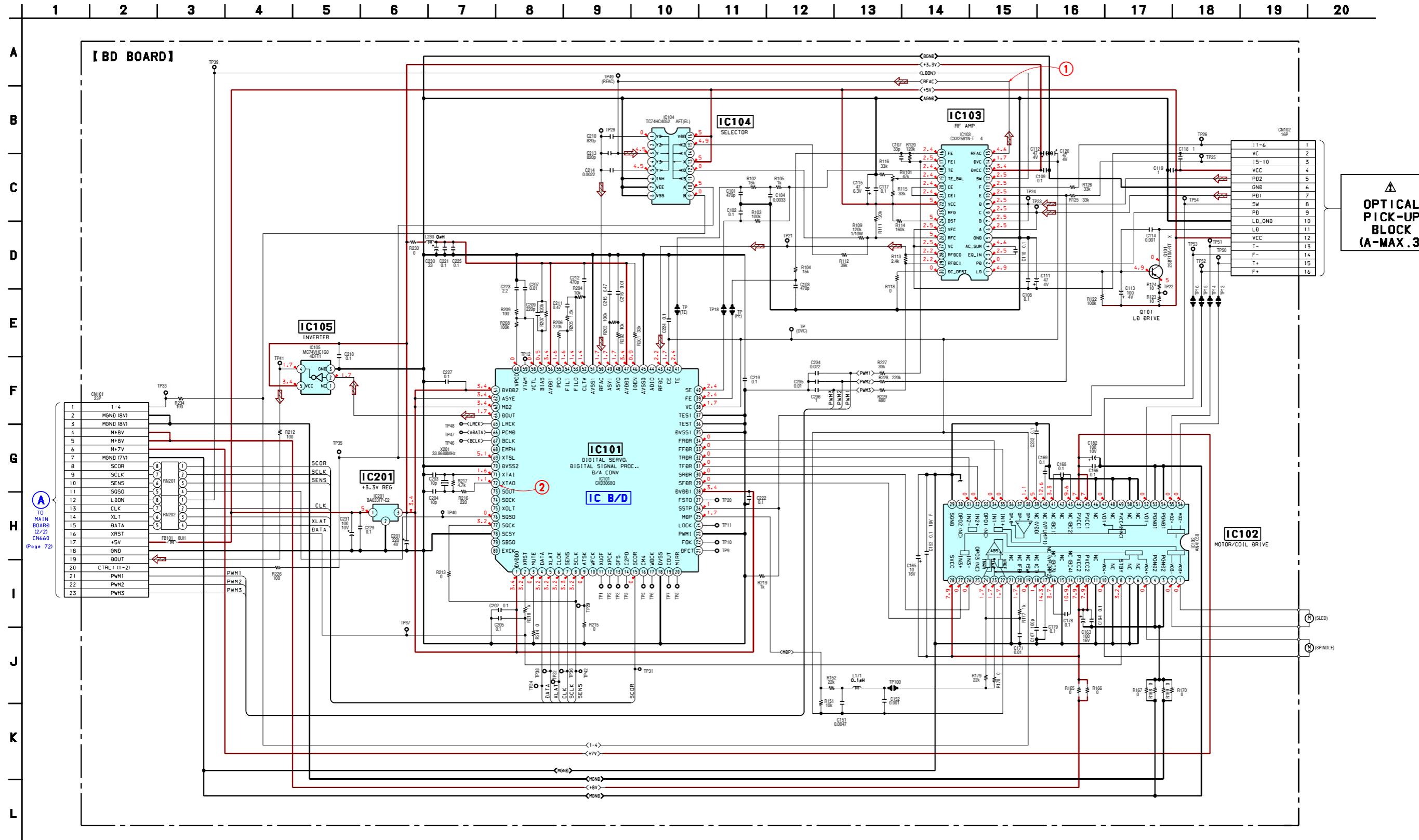
6-2. Printed Wiring Board – BD Section – •  : Uses unleaded solder. • See page 55 for Circuit Boards Location.



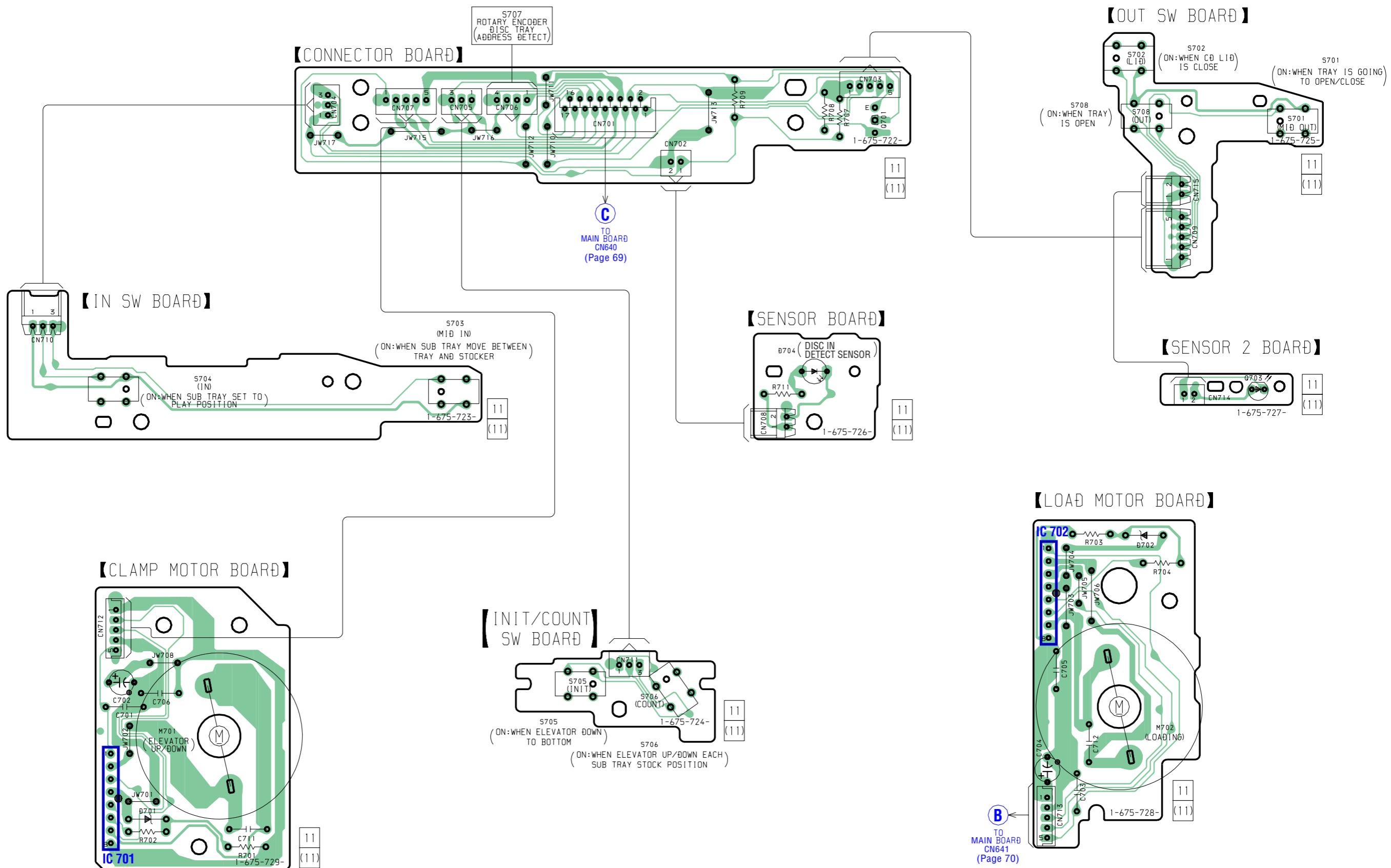
• Semiconductor Location

Ref. No.	Location
IC101	B-2
IC102	C-1
IC103	B-3
IC104	C-2
IC105	B-7
IC201	A-2
Q101	A-3

6-3. Schematic Diagram – BD Section – • See page 55 for Waveform. • See page 77 for IC Block Diagrams.

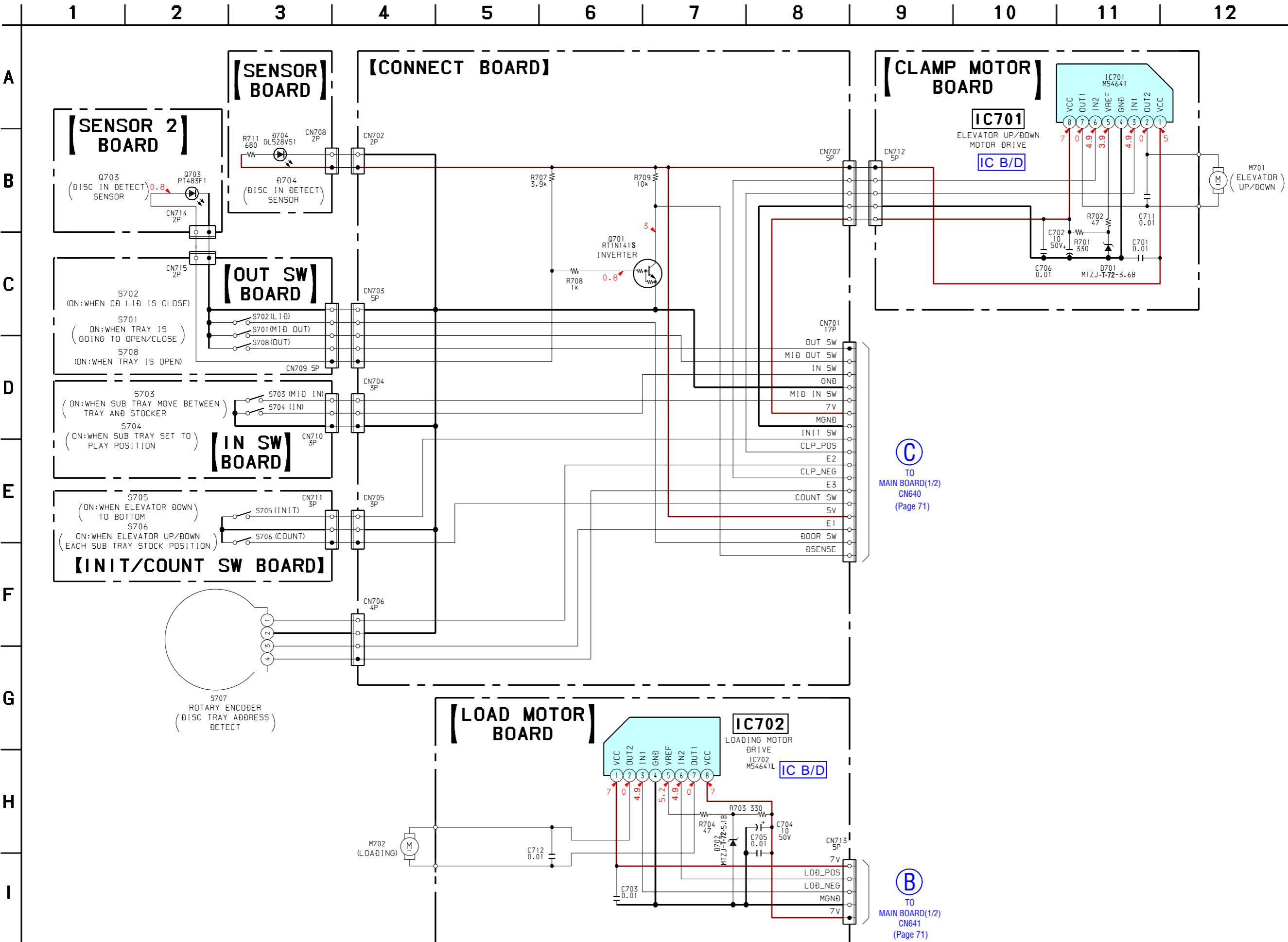


6-4. Printed Wiring Board – SENSER/MOTOR/SW Section – • See page 55 for Circuit Boards Location

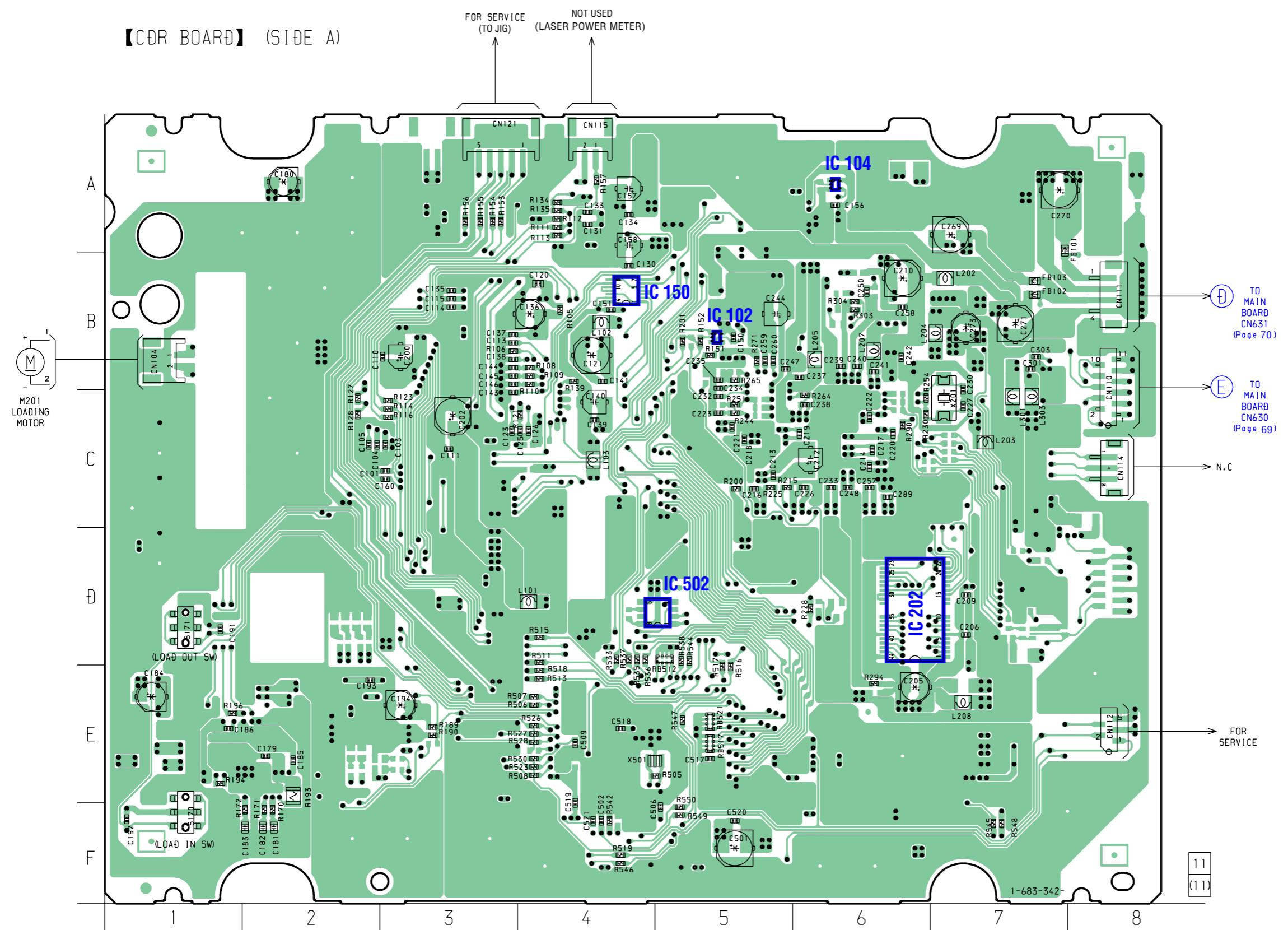


6-5. Schematic Diagram – SENSER/MOTOR/SW Section – • See page 55 for Waveform. • See page 77 for IC Block Diagram

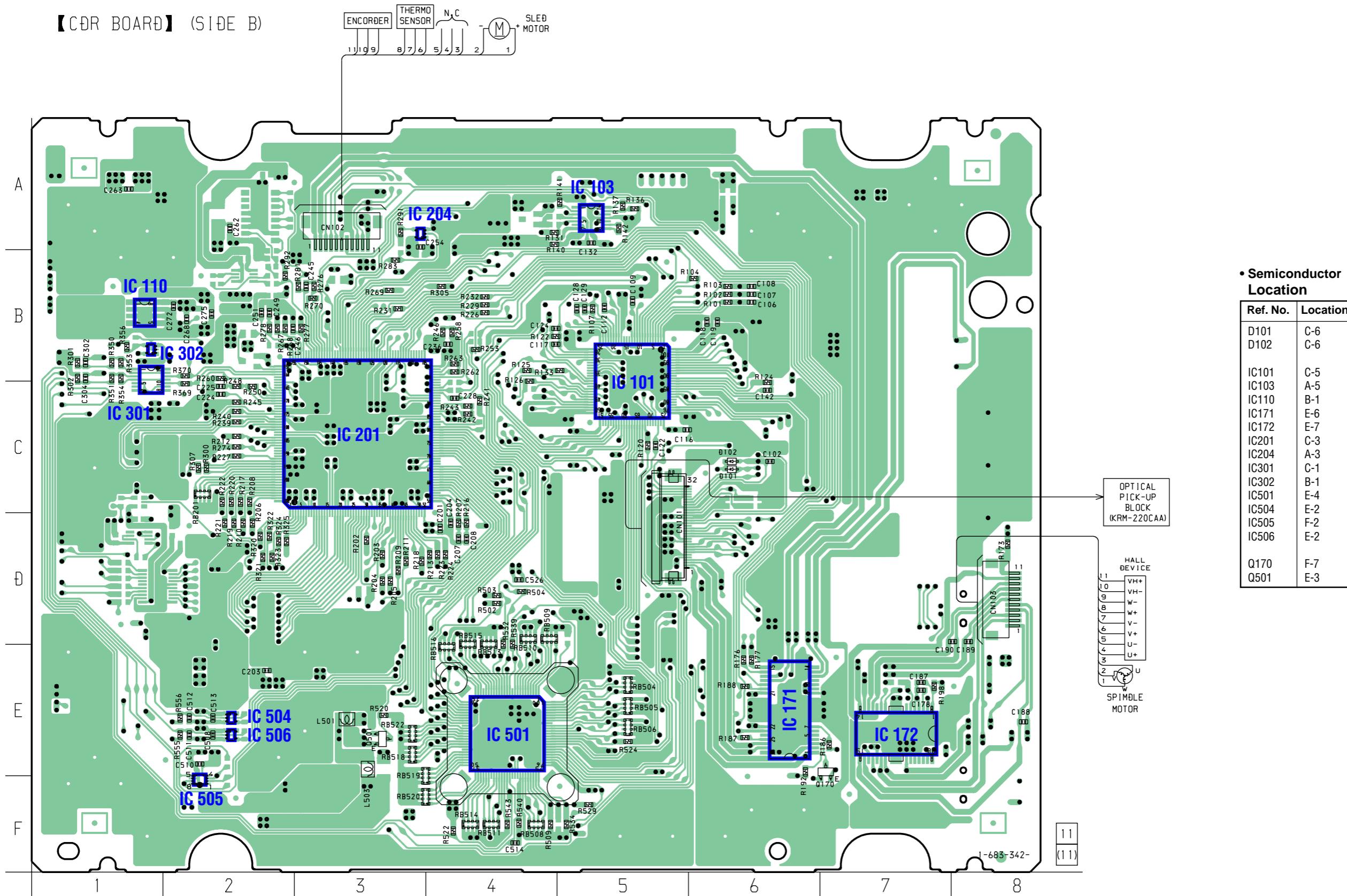
- See page 55 for Waveform.
- See page 77 for IC Block Diagram



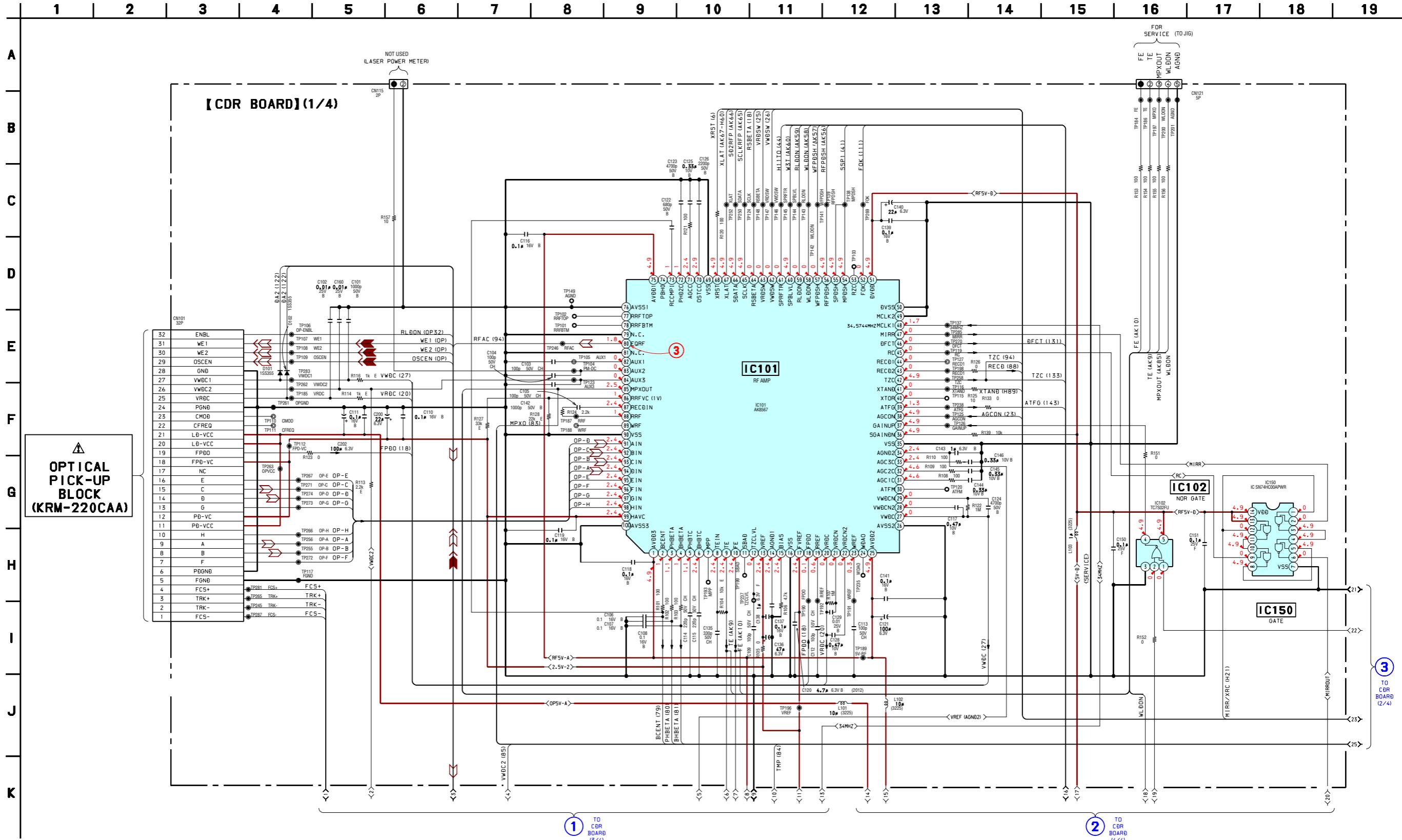
6-6. Printed Wiring Board – CD-R Section (Side A) – • See page 55 for Circuit Boards Location.



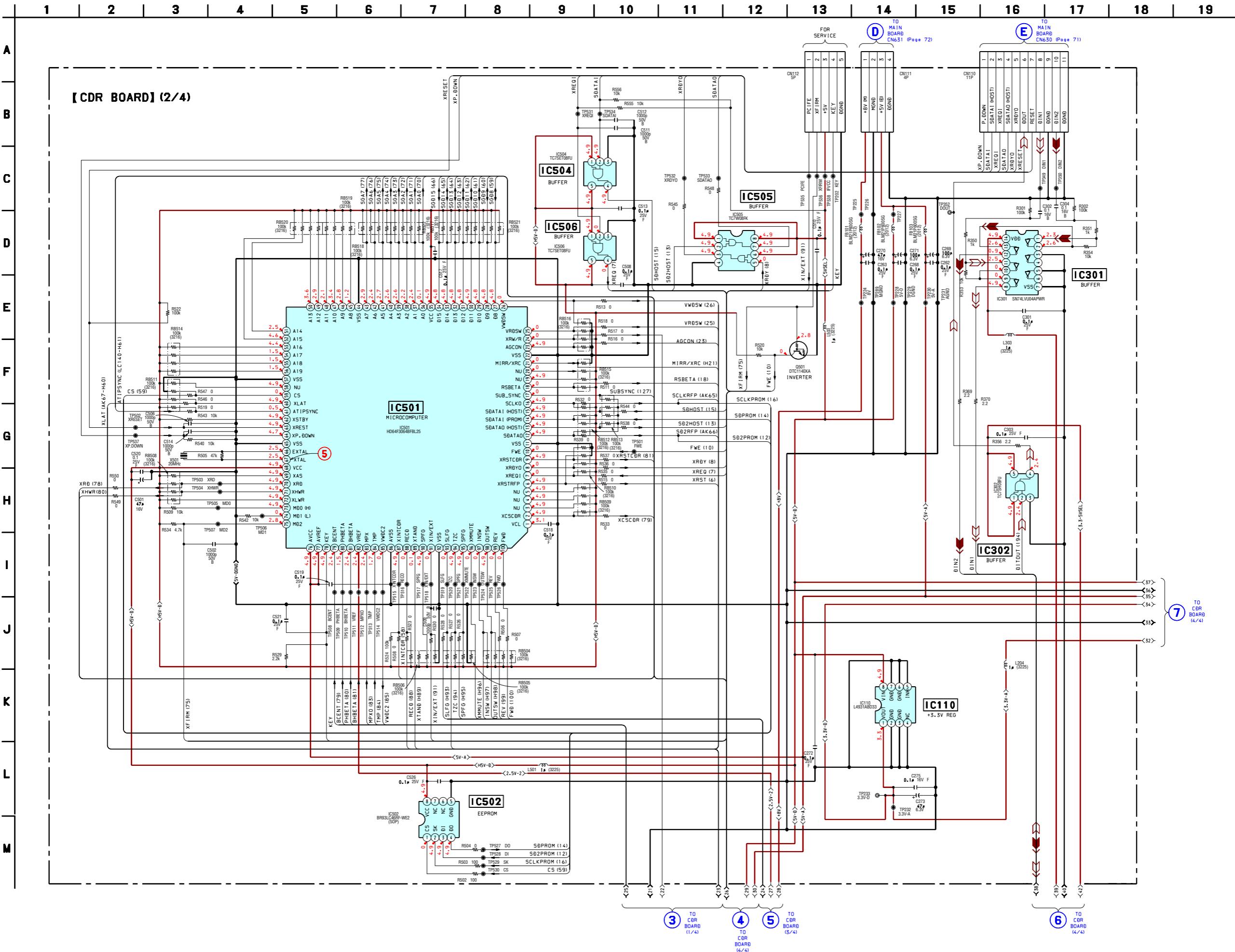
6-7. Printed Wiring Board – CD-R Section (Side B) – • See page 55 for Circuit Boards Location.



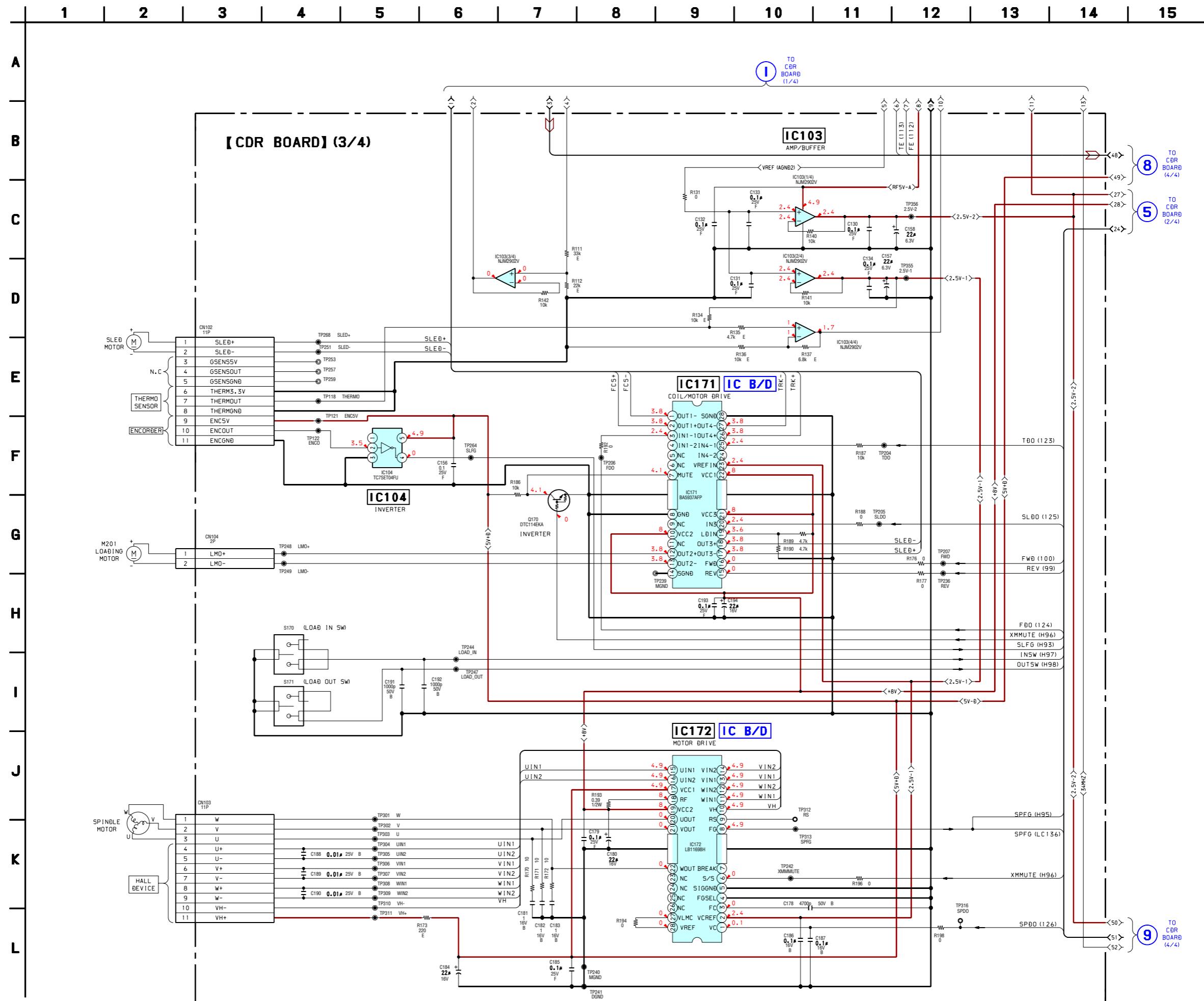
6-8. Schematic Diagram – CD-R Section (1/4) –



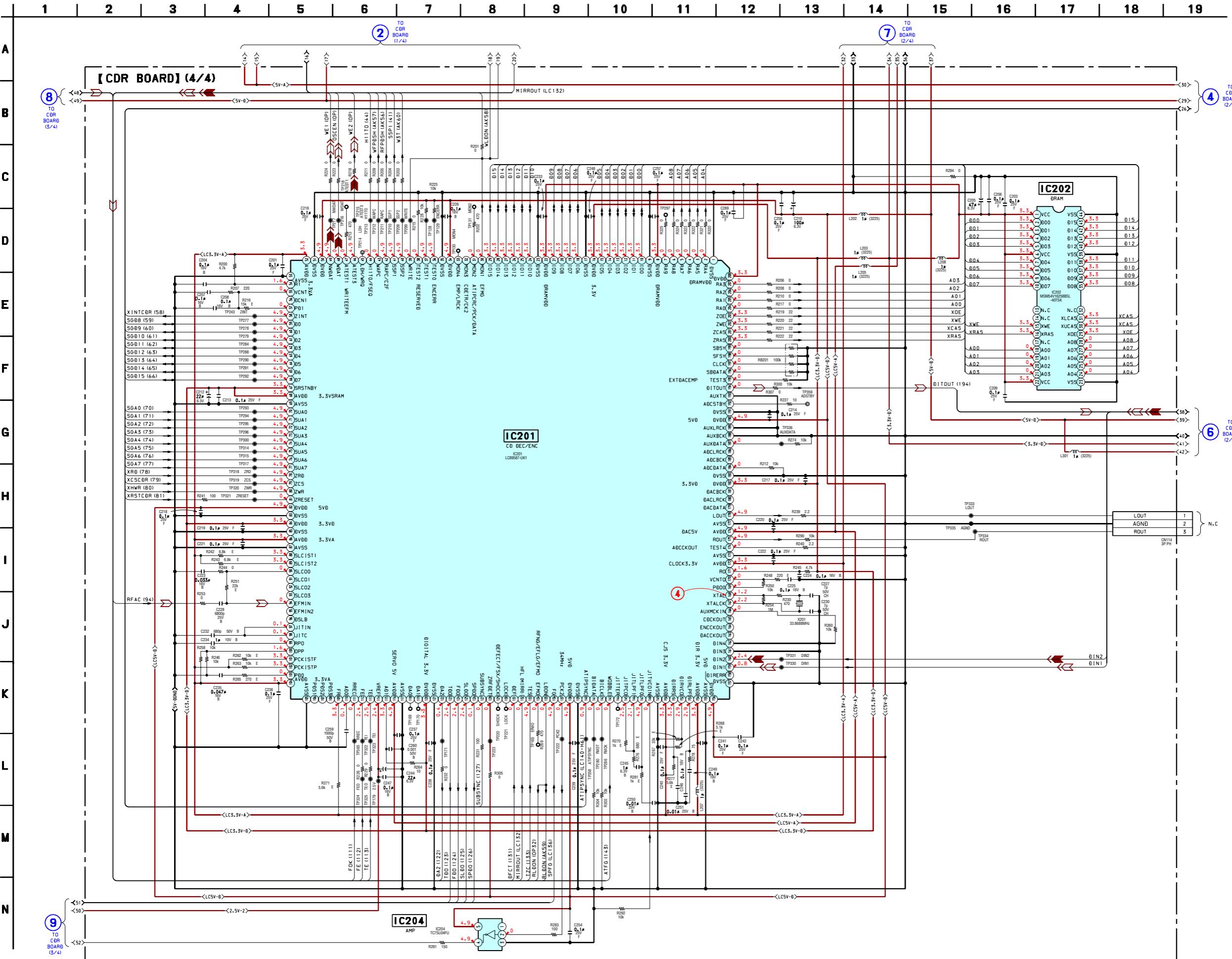
6-9. Schematic Diagram – CD-R Section (2/4) – • See page 55 for Waveform. • See page 88 for IC Pin Function.



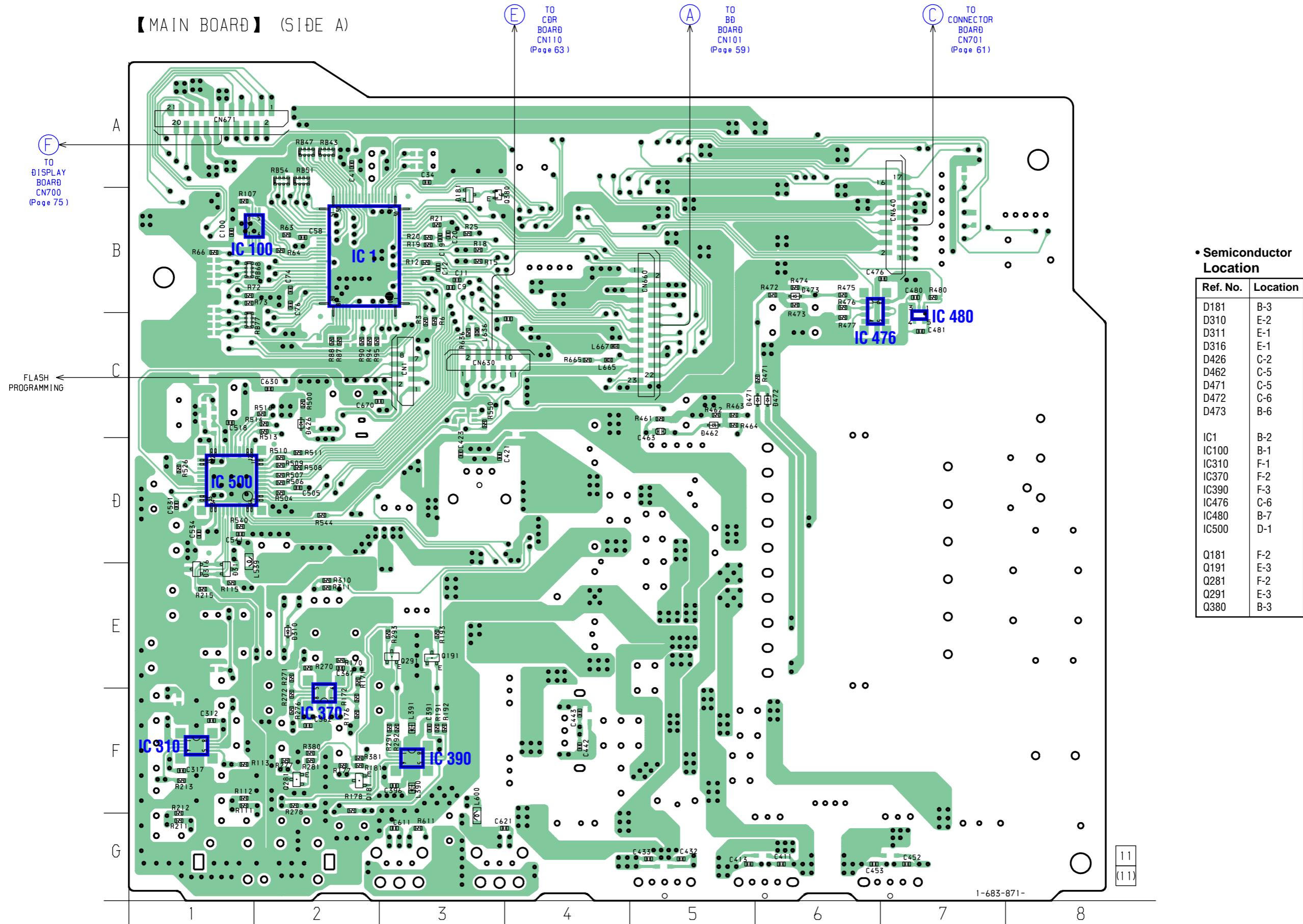
6-10. Schematic Diagram – CD-R Section (3/4) – • See page 78 for IC Block Diagrams.



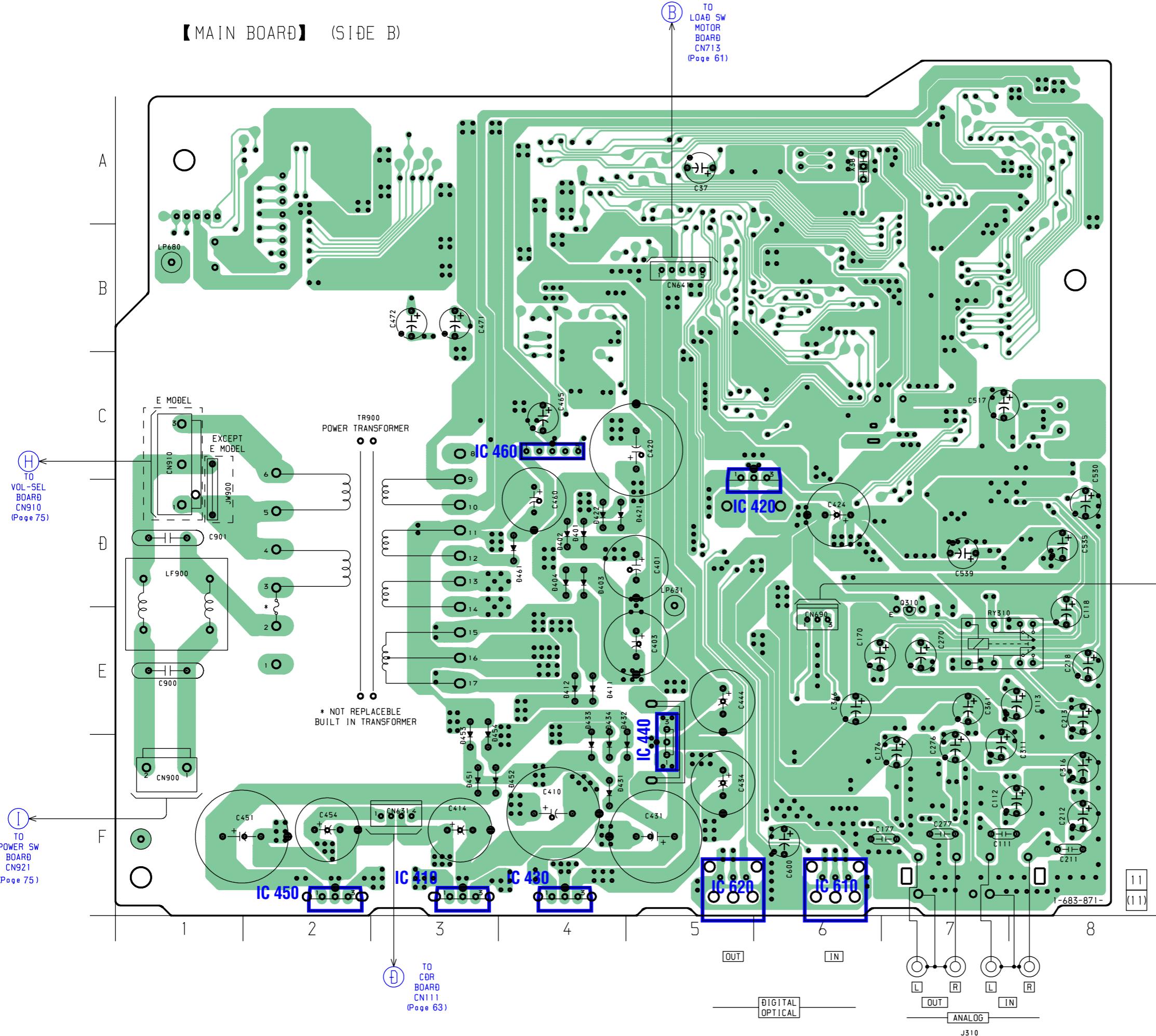
6-11. Schematic Diagram – CD-R Section (4/4) –



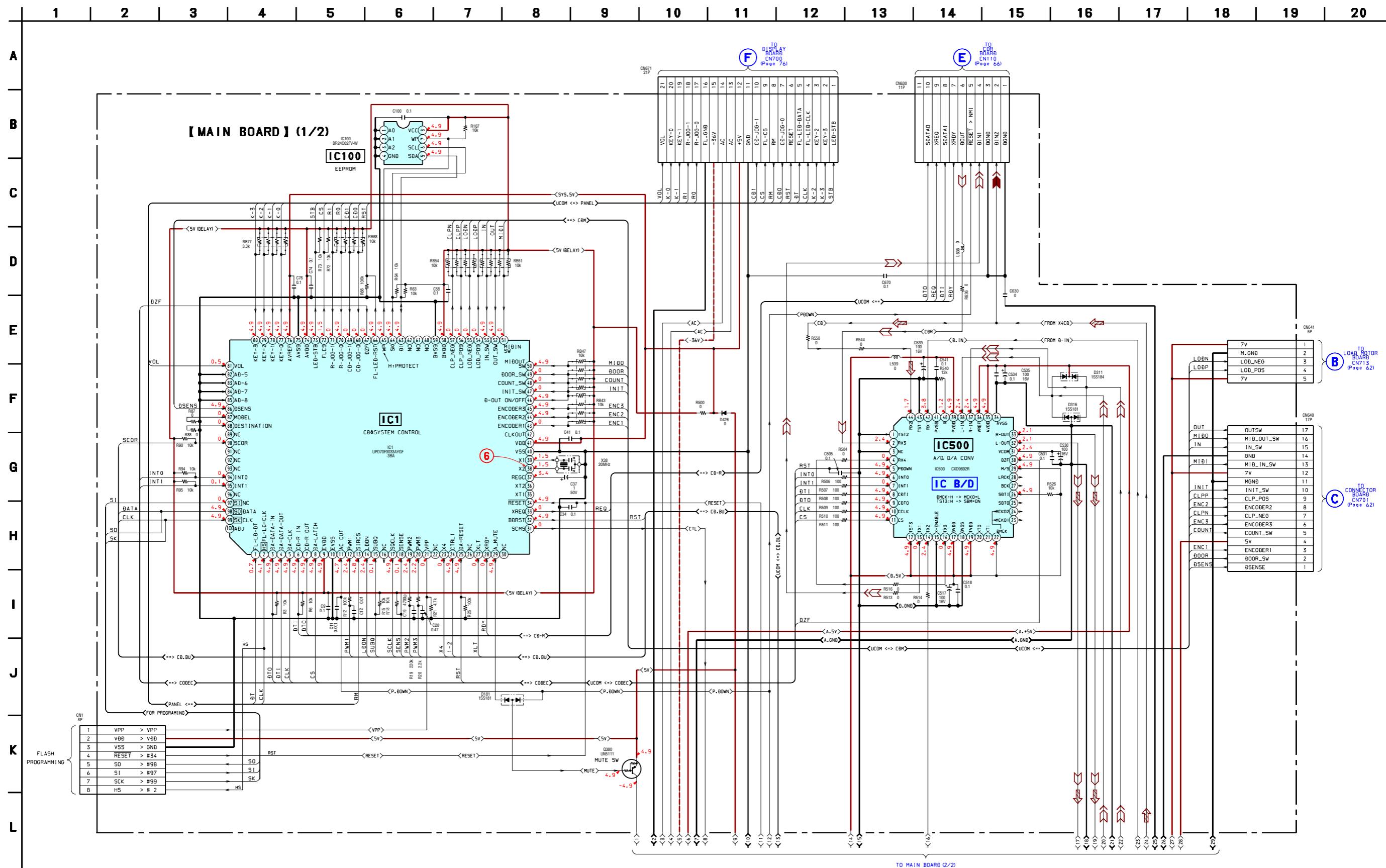
6-12. Printed Wiring Board – MAIN Section (Side A) – • : Uses unleaded solder. • See page 55 for Circuit Boards Location



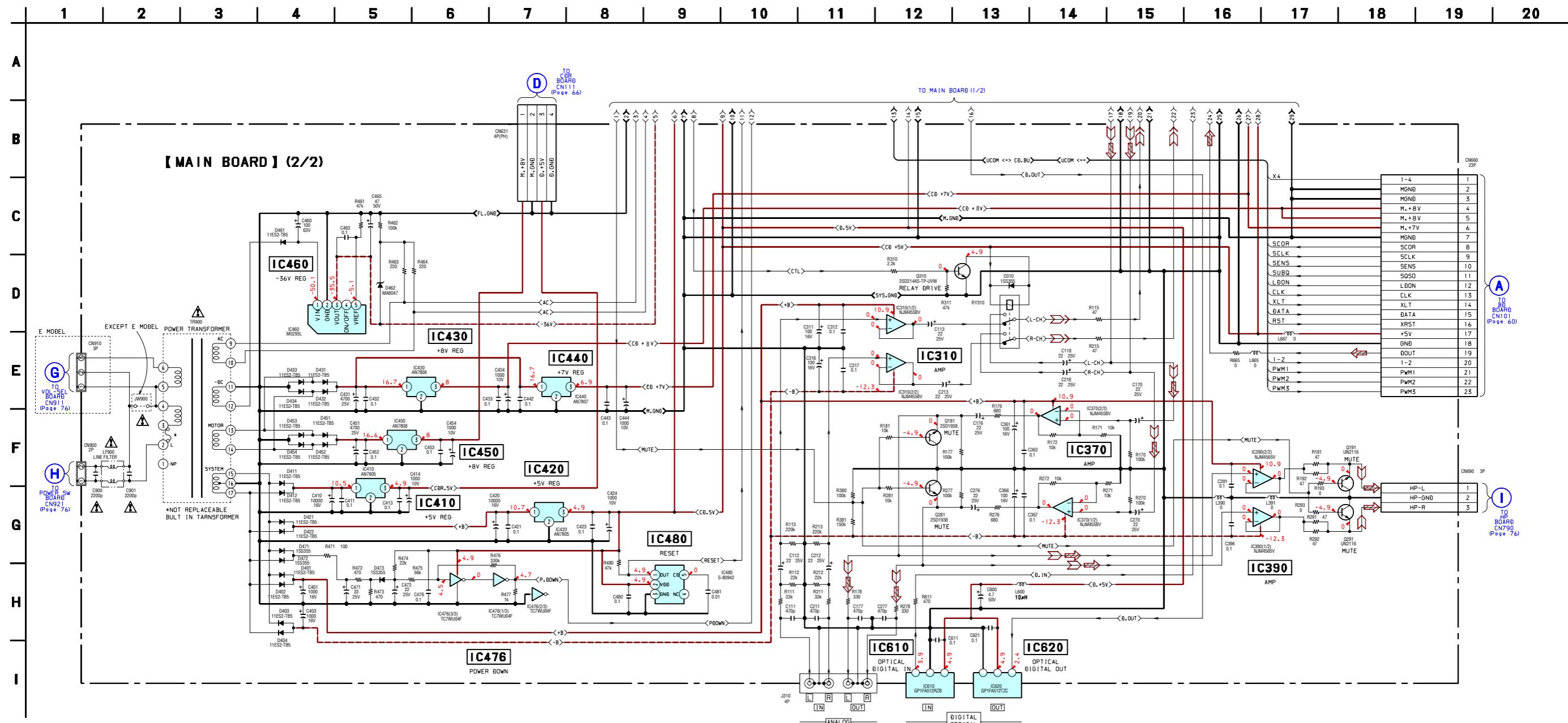
【MAIN BOARD】 (SIDE B)



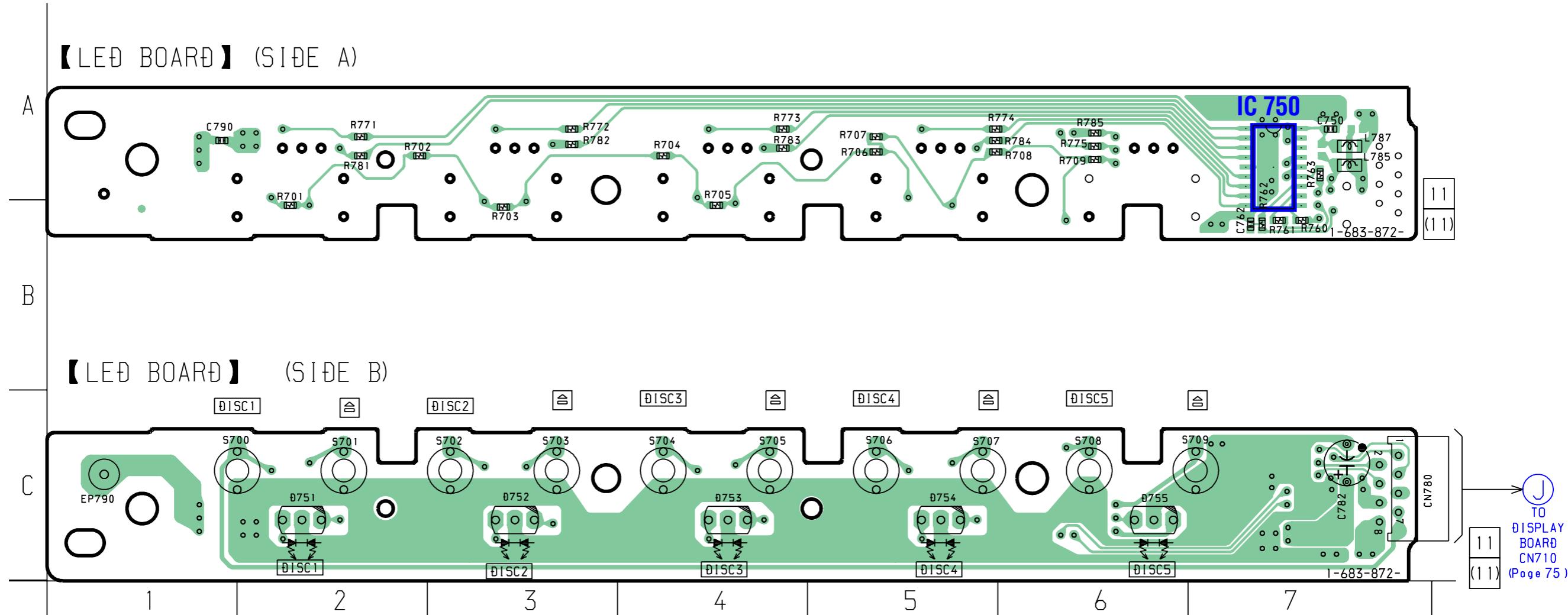
6-14. Schematic Diagram – MAIN Section (1/2) – • See page 55 for Waveform. • See page 79 for IC Block Diagrams. • See page 80 for IC Pin Function.



6-15. Schematic Diagram – MAIN Section (2/2) –



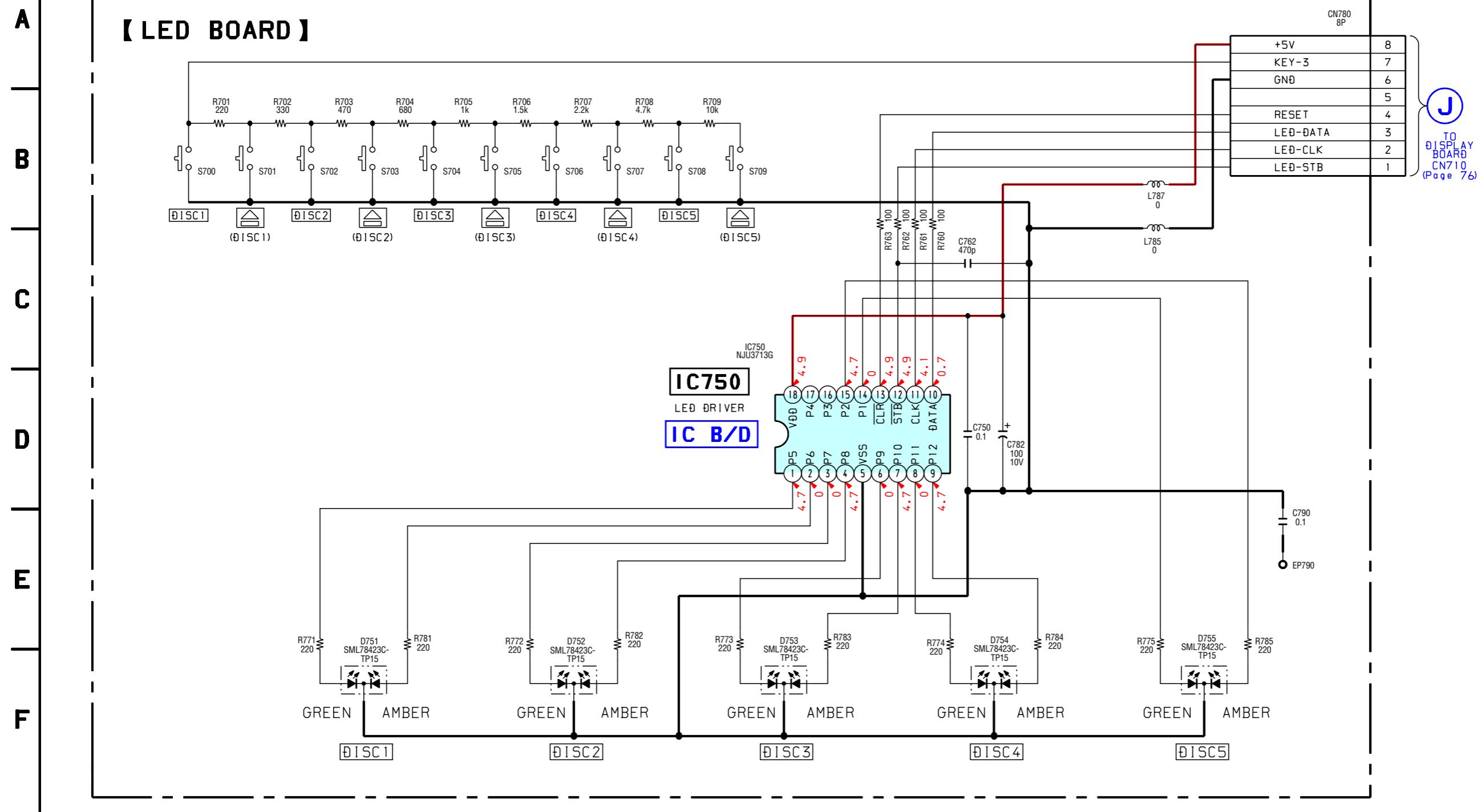
6-16. Printed Wiring Board – LED Section – •  : Uses unleaded solder. • See page 55 for Circuit Boards Location.



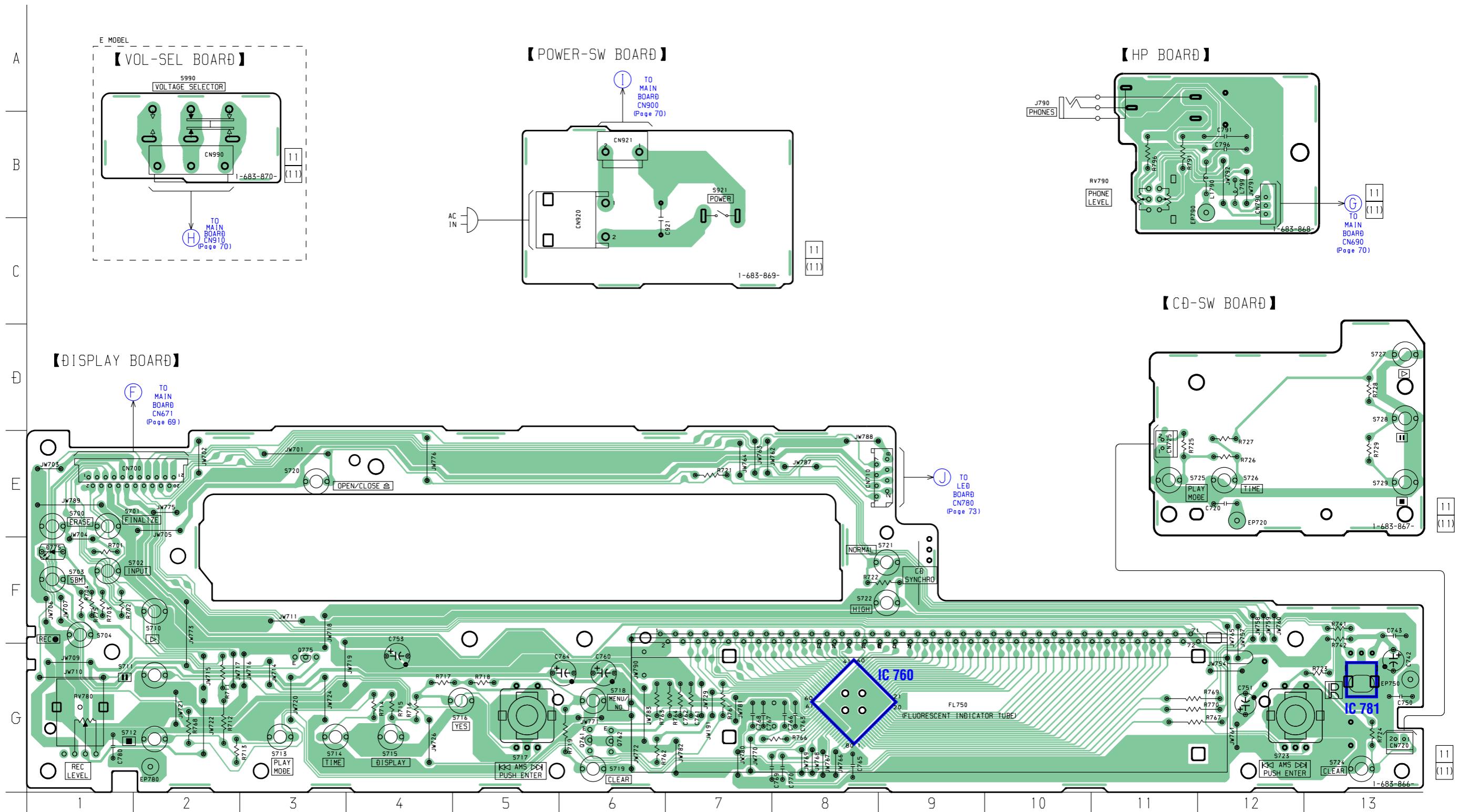
• Semiconductor Location

Ref. No.	Location
D751	C-2
D752	C-3
D753	C-4
D754	C-5
D755	C-6
IC750	A-7

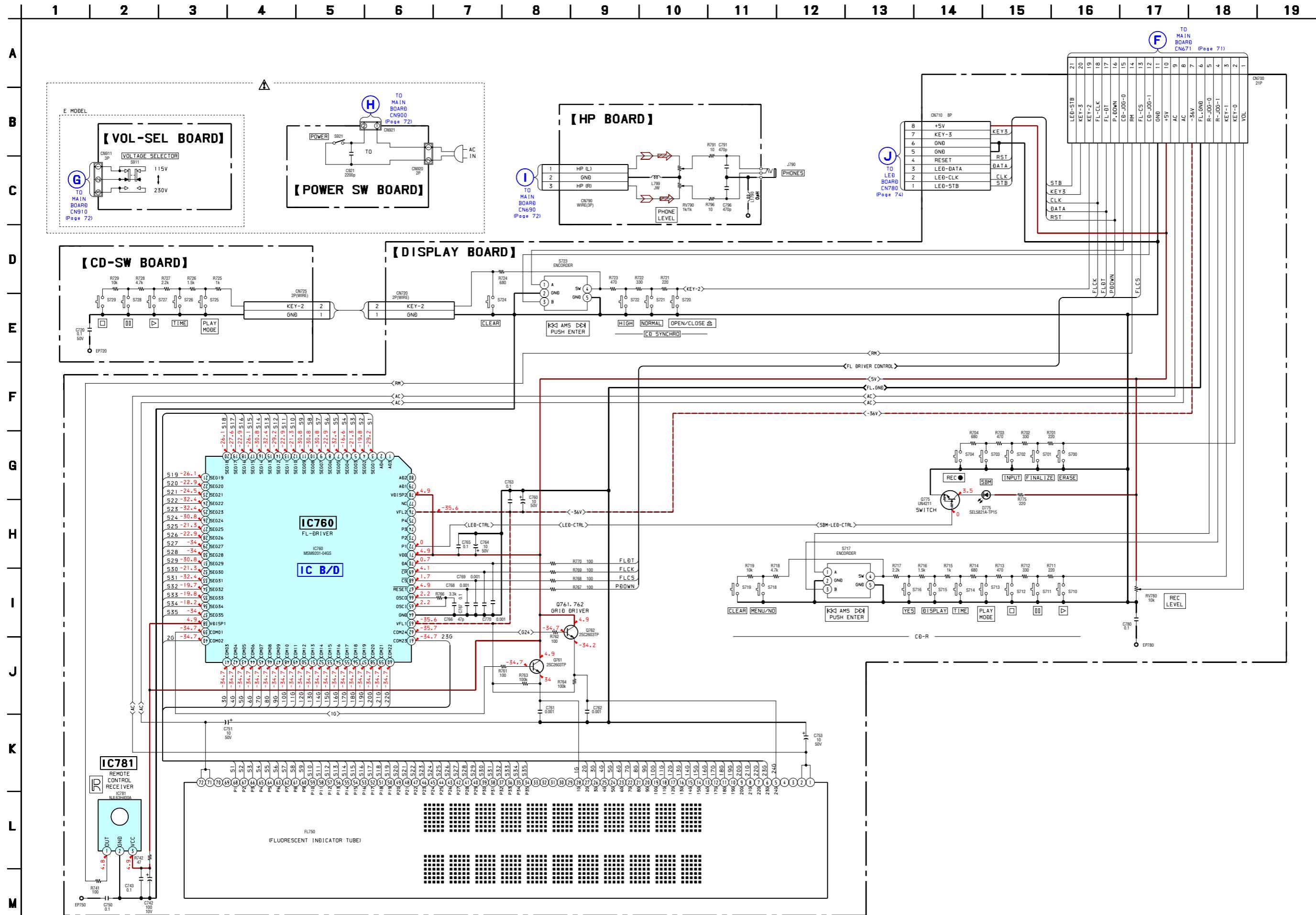
1 2 3 4 5 6 7 8 9 10 11



6-18. Printed Wiring Board – DISPLAY Section – •  : Uses unleaded solder. • See page 55 for Circuit Boards Location.

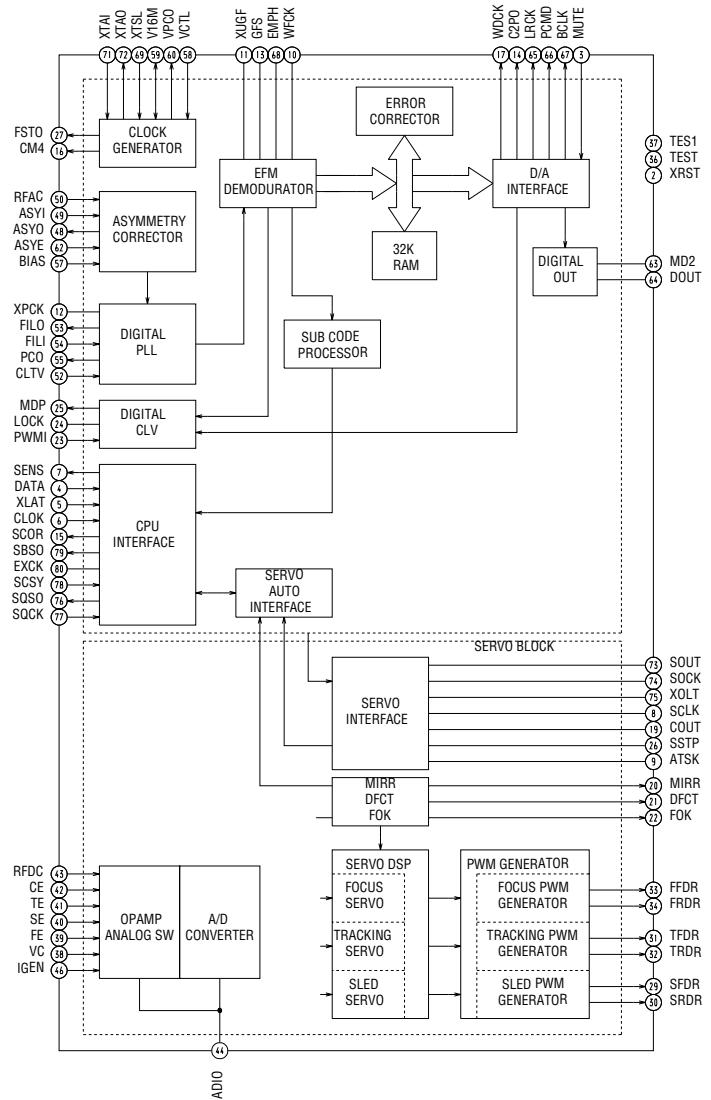


6-19. Schematic Diagram – DISPLAY Section – • See page 79 for IC Block Diagram

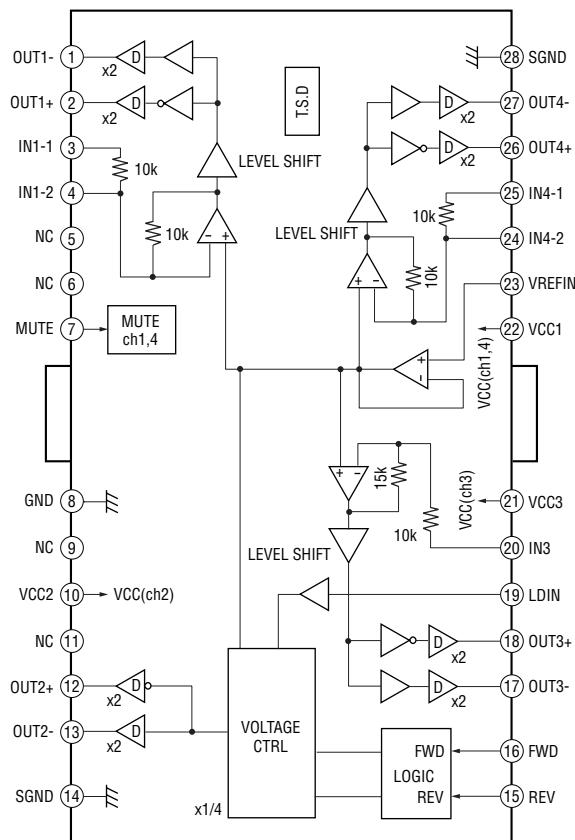


6-20. IC Block Diagrams

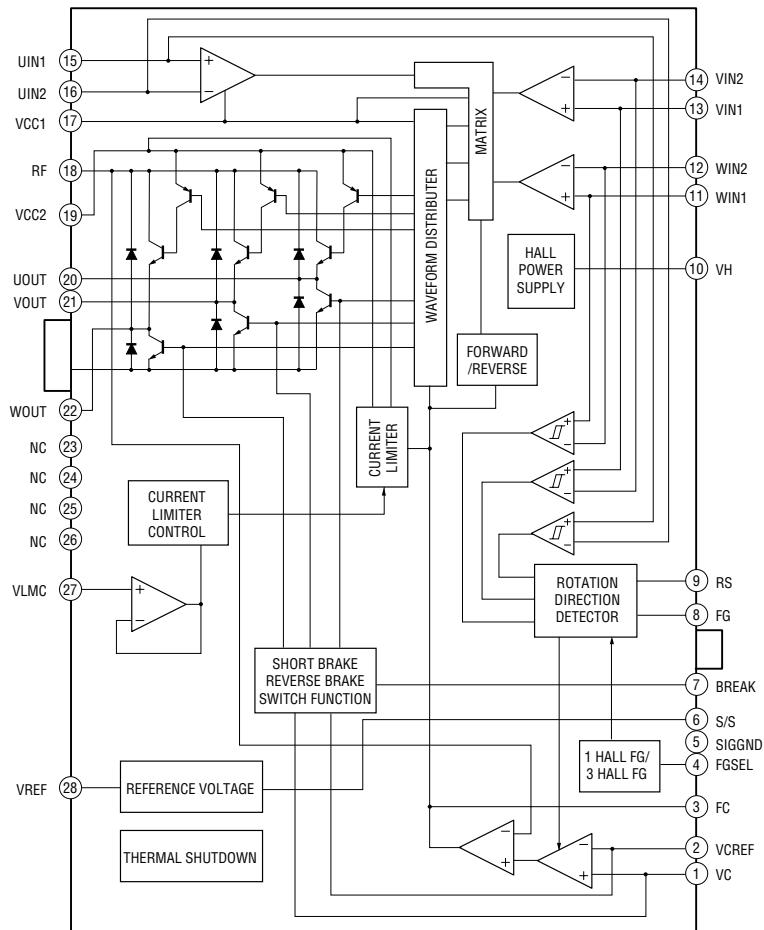
IC101 CXD3068Q (BD Board)



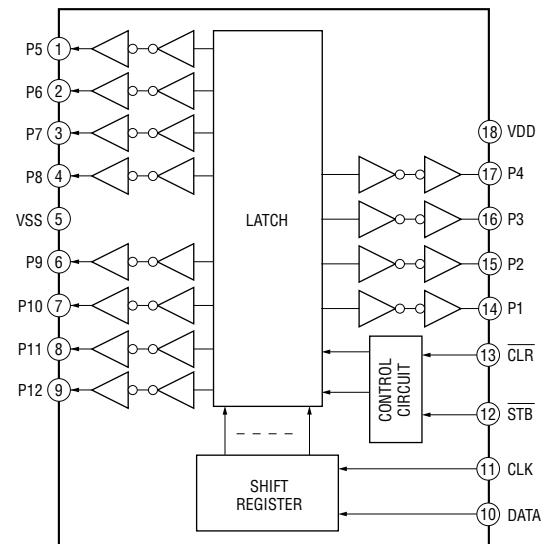
IC171 BA5937AFP-E2 (CDR Board)



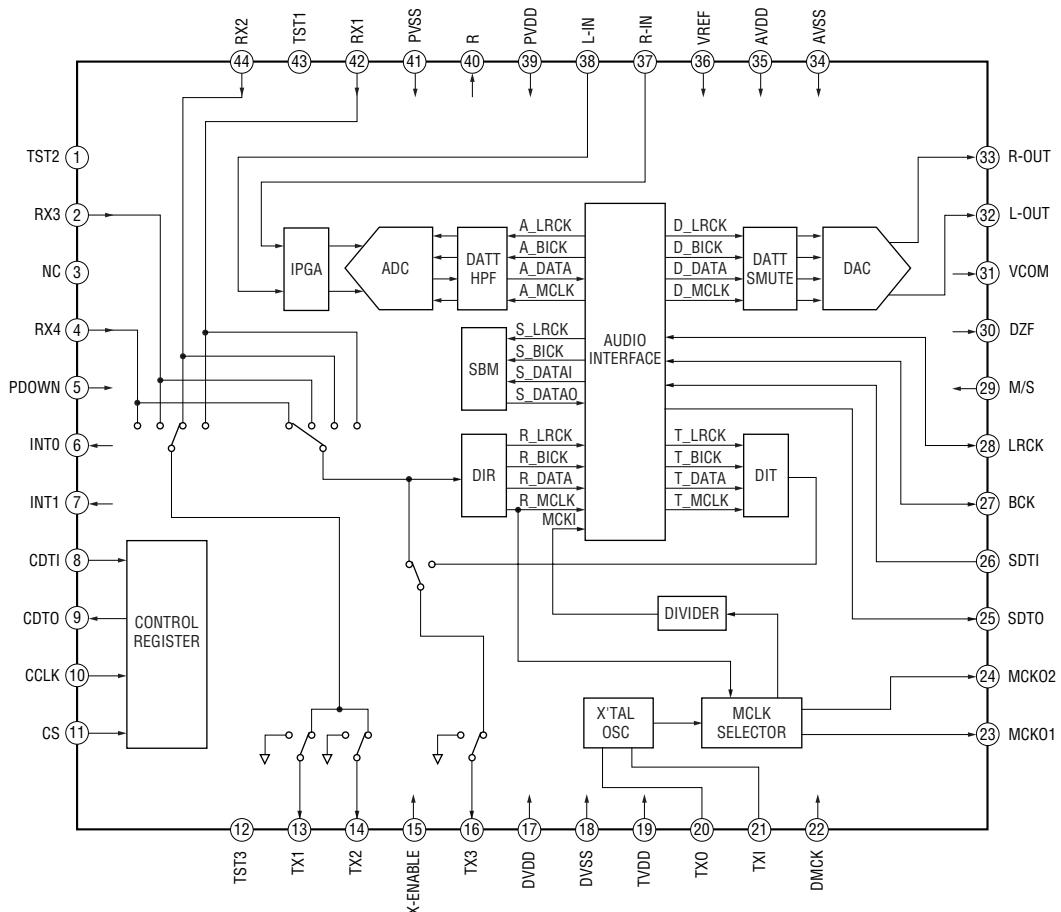
IC172 LB11698H-TE-L (CDR Board)



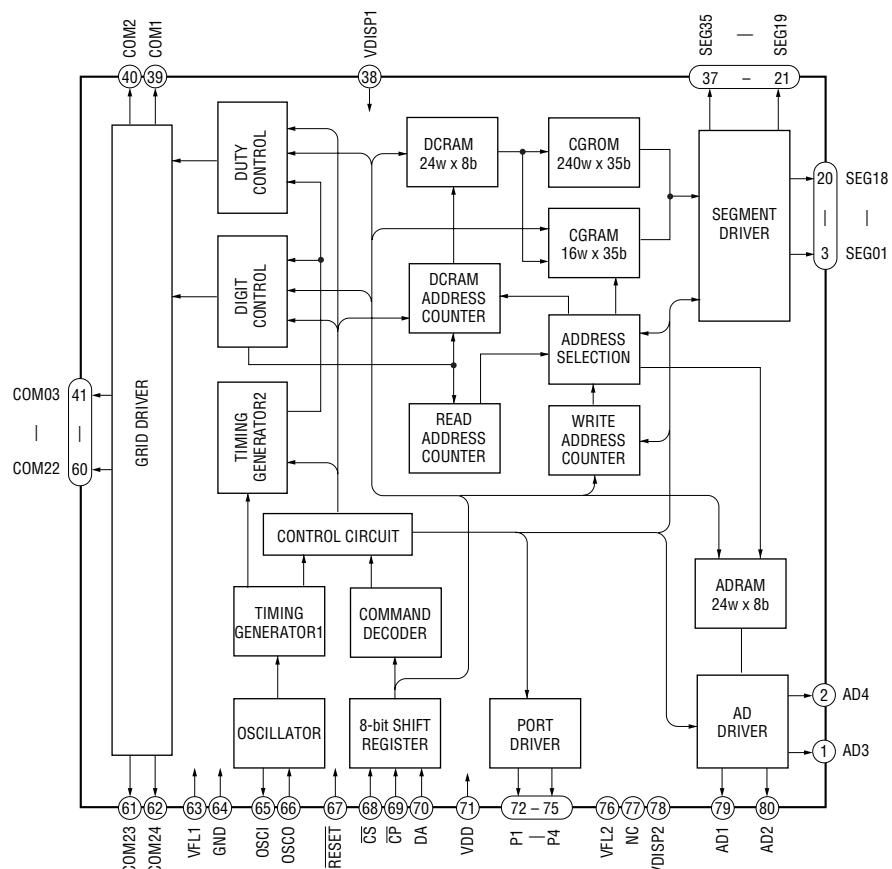
IC750 NJU3713G (TE2) (LED Board)



IC500 CXD9692R (MAIN Board)



IC760 MSM9201-04GS-K (DISPLAY Board)



6-21. IC Pin Function Description

• IC1 μPD70F3033AYGF-3BA CD & SYSTEM CONTROL (MAIN Board)

Pin No.	Pin Name	I/O	Description
1	FL-LD-DT	O	Data output to the FL and LED drivers
2	FL-LD-CLK	O	Clock output to the FL and LED drivers
3	DA-DATA-IN	I	Data input from the AD/DA converter (IC500)
4	DA-DATA-OUT	O	Data output to the AD/DA converter (IC500)
5	DA-CLK	O	Clock output to the AD/DA converter (IC500)
6	CD-R IN	I	Data input from the μCOM (IC501)
7	CD-R OUT	O	Data output to the μCOM (IC501)
8	DA-LATCH	O	Data latch signal output to the AD/DA converter (IC500)
9	EVDD	—	Power supply (+5V)
10	EVSS	—	Ground terminal
11	AC CUT	I	AC CUT signal input “L” : AC CUT
12	PWM1	O	PWM signal output to FE
13	SIRCS	I	SIRCS signal input from the remote control receiver
14	LDON	O	Laser ON signal output
15	SUBQ	I	Sub-code Q serial data input
16	NC	—	Not used (open)
17	SQCLK	O	Sub-code Q output serial clock output
18	SENSE	I	SENSE signal input from the IC101
19	PWM2	O	PWM signal output to TE
20	PWM3	O	PWM signal output to RFDC
21	VPP	—	Flash programming power supply
22	NC	—	Not used (open)
23	X4	O	Disc rotation speed selection signal output
24	CTRL1	O	Disc rotation speed selection signal output
25	DA-RESET	O	Reset signal output to the AD/DA converter (IC500)
26	NC	—	Not used (open)
27	XLT	O	Serial data latch signal output to the IC101
28	XRDY	I	Data ready signal input from the μCOM (IC501)
29	A_MUTE	O	Muting control signal output “L” : ON
30	NC	—	Not used (open)
31	SCMS	O	Analog line selection signal output “H” : SCMS ON at SYNC mode
32	BDRST	O	BD reset signal output “L” : reset
33	XREQ	O	Data request signal output to the μCOM (IC501)
34	RESET	I	Reset signal input
35	XT1	I	Sub-clock input
36	XT2	O	Sub-clock output
37	REGC	—	Electrolytic capacitor terminal for the regulator
38	X2	O	Ceramic resonator terminal
39	X1	I	Ceramic resonator terminal
40	VSS	—	Ground terminal
41	VDD	—	Power supply (+5V)
42	CLKOUT	O	Clock output (open)
43 to 45	ENCODER1 to ENCODER3	I	Disc tray address detection signal input from the rotary encoder
46	D-OUT ON/OFF	O	Not used (open)
47	INIT_SW	I	INIT detection switch signal input
48	COUNT_SW	I	COUNT detection switch signal input
49	DOOR_SW	I	DOOR detection switch signal input
50	MIDOUT_SW	I	MIDOUT detection switch signal input
51	MIDIN_SW	I	MIDIN detection switch signal input

Pin No.	Pin Name	I/O	Description
52	OUT_SW	I	Tray open/close detection switch signal input
53	IN_SW	I	Tray open/close detection switch signal input
54	LOD_POS	O	Loading motor control signal output
55	LOD_NEG	O	Loading motor control signal output
56	CLP_POS	O	Elevator up/down motor control signal output
57	CLP_NEG	O	Elevator up/down motor control signal output
58	BVDD	—	Power supply (+5V)
59	BVSS	—	Ground terminal
60 to 62	NC	—	Not used (open)
63	DI	I/O	EEPROM I2C data input/output
64	SK	O	EEPROM I2C clock output
65	WP	O	EEPROM write protect signal output
66	FL-LED-RST	O	Reset signal output to the FL and LED drivers
67	DZF	I	Zero data detect signal input from the AD/DA converter (IC500)
68	CD-JOG-0	I	CD jog signal input
69	CD-JOG-1	I	CD jog signal input
70	R-JOG-0	I	CD-R jog signal input
71	R-JOG-1	I	CD-R jog signal input
72	FLCS	O	Chip select signal output to the FL driver
73	LED-STB	O	Strobe signal output to the LED driver
74	AVDD	—	Power supply for analog circuit (+5V)
75	AVSS	—	Ground terminal for analog circuit
76	AVREF	—	Analog reference voltage input terminal
77 to 80	KEY-0 to KEY-3	I	Key data input
81	VOL	I	Analog recording level signal input from the RV780
82 to 85	AD-5 to AD-8	—	Not used (ground)
86	DSENS	I	Disc in detection sensor signal input
87	MODEL	I	Model setting terminal
88	DESTINATION	I	Destination setting terminal
89	NC	—	Not used (open)
90	SCOR	I	Sub-code sync (S0+S1) detection signal input from the IC101
91 to 93	NC	—	Not used (open)
94, 95	INT0, INT1	I	Interrupt signal input from the AD/DA converter (IC500)
96, 97	NC	—	Not used (open)
98	DATA	O	Data output to the IC101
99	CLK	O	Clock output to the IC101
100	ADJ	I	ADJ mode selection input terminal Not used (open)

• IC101 AK8567 S/H & MATRIX, MPX (CDR Board)

Pin No.	Pin Name	I/O	Description
1	AVDD3	—	Power supply (analog)
2	BCENT	O	Center signal output
3	PHBETA	O	β signal top level signal output
4	BHBETA	O	β signal bottom level signal output
5	PHBTC	O	Extrernal capacitor terminal for PHBETA droop rate setting
6	BHBTC	O	Extrernal capacitor terminal for BHBETA droop rate setting
7	MPP	O	Main push-pull signal output Not used (open)
8	TEIN	I	Tracking signal processing input
9	TE	O	Tracking error signal output
10	FE	O	Focus error signal output
11	SBAD	O	SBAD signal output Not used (open)
12	TZCLVL	I	Tracking zero cross compare level input
13	VREF	I/O	Decoupling terminal for internal reference voltage / internal reference voltage input terminal
14	AGND1	O	Decoupling terminal for internal reference voltage
15	BIAS	O	Bias resistor connection terminal BIAS = 4.7k Ω
16	VSS	—	Ground terminal (analog)
17	FVREF	I	APC reference voltage input terminal
18	FPDO	I	Laser monitor voltage input
19	RREF	I/O	Power setting voltage input for read APC / internal DAC setting voltage output
20	VRDC	O	Read laser driver control signal output
21	VRDCN	I	Read laser driver control amplifier (-) terminal
22	VRDCN2	I	Read laser driver time constant setting terminal
23	WREF	I/O	Power setting voltage input for write APC / internal DAC setting voltage output
24	WDAO	O	Power setting internal DAC voltage output for write APC Not used (open)
25	AVDD2	—	Power supply (analog)
26	AVSS2	—	Ground terminal (analog)
27	VWDC	O	Write laser driver control signal output
28	VWDCN2	I	Write laser driver time constant setting terminal
29	VWDCN	I	Write laser driver control amplifier (-) terminal
30	ATFM	O	Wobble signal output
31	AGC1C	O	External capacitor terminal for AGC response speed setting
32	AGC2C	O	External capacitor terminal for AGC response speed setting
33	AGC3C	O	External capacitor terminal for AGC response speed setting
34	AGND2	O	Decoupling terminal for internal reference voltage
35	VSS	—	Ground terminal (analog)
36	SGAINDN	I	Gain selection signal input
37	GAINUP	I	CD-RW selection control signal input
38	AGCON	I	Wobble AGC enable signal input “H” : AGC ON, “L” : AGC reset
39	ATFG	O	ATIP FG signal output (Wobble signal after formation of 2 values)
40	XTOR	O	Tracking amplitude detection signal output
41	XTAND	O	Tracking failure detection signal output
42	TZC	O	Tracking zero cross detection signal output
43	RECD2	O	Recorded block detection signal output 2 “H” : recorded block, “L” : unrecorded block
44	RECD1	O	Recorded block detection signal output 1 “H” : recorded block, “L” : unrecorded block
45	RC	O	RC signal output
46	DFCT	O	DFCT signal output
47	MIRR	O	MIRR signal output
48	MCLK1	I	Main clock input 1 (sine wave input) 34.5744MHz
49	MCLK2	I	Main clock input 2 (sine wave input) fixed at “L”
50	DVSS	—	Ground terminal (digital)

Pin No.	Pin Name	I/O	Description
51	DVDD	—	Power supply (digital)
52	FOK	O	FOK signal output
53	RZC	O	RF zero cross detection signal output Not used (open)
54	MPDSH	I	Sampling pulse input for main beam signal “H” : sample, “L” : hold
55	SPDSH	I	Sampling pulse input for side beam signal “H” : sample, “L” : hold
56	RFPDSH	I	Sampling pulse input for read APC “H” : sample, “L” : hold
57	WFDPDSH	I	Sampling pulse input for write APC “H” : sample, “L” : hold
58	WLDON	I	Write LD control signal input “H” : set write APC value to zero, “L” : LD ON
59	RLDON	I	Read LD control signal input “H” : set read APC value to zero, “L” : LD ON
60	SPBLVL	I	BLEVEL sampling pulse input “H” : sample, “L” : hold
61	SPRFTR	I	WRFTR sampling pulse input “H” : sample, “L” : hold
62	VWDSW	I	Write laser driver time constant setting switch control signal input “H” : ON, “L” : OFF
63	VRDSW	I	Read laser driver time constant setting switch control signal input “H” : ON, “L” : OFF
64	RSBETA	I	β measuring circuit reset signal input “H” : reset the outputs of PHBETA and BHBETA
65	SCLK	I	Clock input for register setting
66	SDATA	I	Serial data input for register setting
67	XLAT	I	Latch signal input for register setting
68	XRST	I	Register reset terminal “L” : reset
69	VSS	—	Ground terminal (analog)
70	OSTCC	O	Capacitor connection terminal for setting fc of the equalizer output offset canceller
71	AGCC	O	External capacitor connection terminal for setting the RFAGC response speed
72	PHD2C	O	External capacitor connection terminal for setting the P/H2 droop rate
73	RCCMPI	I	RC detection comparator input
74	PBHO	O	Bottom/top level output of RRF signal
75	AVDD1	—	Power supply (analog)
76	AVSS1	—	Ground terminal (analog)
77	RRFTOP	O	Peak level output of RRF signal Not used (open)
78	RRFBTM	O	Bottom level output of RRF signal Not used (open)
79	N.C.	—	Not used (ground)
80	EQRF	O	Equalizer filter output
81	N.C.	—	Not used (ground)
82	AUX1	I	Auxiliary input terminal (1) for monitoring signal Not used
83	AUX2	I	Auxiliary input terminal (2) for monitoring signal from the CN115 Not used
84	AUX3	I	Auxiliary input terminal (3) for monitoring VWDC2 signal from the optical pick-up
85	MPXOUT	O	Multiplexer signal output for the signal monitoring
86	RRFVC(1V)	I	Level shift voltage input terminal for RRF signal
87	RECDIN	I	RF signal input for the recorded block detection
88	RRF	O	Read RF signal output
89	WRF	O	Write RF signal output (open)
90	VSS	—	Ground terminal (analog)
91	AIN	I	Main beam signal (A) input
92	BIN	I	Main beam signal (B) input
93	CIN	I	Main beam signal (C) input
94	DIN	I	Main beam signal (D) input
95	EIN	I	Side beam signal (E) input
96	FIN	I	Side beam signal (F) input
97	GIN	I	Side beam signal (G) input
98	HIN	I	Side beam signal (H) input
99	HAVC	I	Main/side beam signal center voltage input
100	AVSS3	—	Ground terminal (analog)

• IC201 LC89587-UK1-E CD DEC/ENC (CDR Board)

Pin No.	Pin Name	I/O	Description
1	DVSS	—	Ground terminal (digital)
2 to 6	RA4 to RA8	O	Address signal output to the buffer RAM for audio data delay
7	RA9	O	Address signal output to the buffer RAM for audio data delay Not used (open)
8	DVDD	—	Power supply +3.3V (DRAM I/F)
9	DVSS	—	Ground terminal (digital)
10 to 15	IO0 to IO5	I/O	Data input/output to the buffer RAM for audio data delay
16	DVDD	—	Power supply +3.3V (digital)
17	DVSS	—	Ground terminal (digital)
18 to 21	IO6 to IO9	I/O	Data input/output to the buffer RAM for audio data delay
22	DVDD	—	Power supply +3.3V (DRAM I/F)
23	DVSS	—	Ground terminal (digital)
24 to 29	IO10 to IO15	I/O	Data input/output to the buffer RAM for audio data delay
30	MON1	O	Monitor output EFMG signal
31	MON2	O	Monitor output ATIPCRC/PCK/DATA signal (open)
32	MON3	O	Monitor output CDETR/CK2 signal
33	MON4	O	Monitor output EMP/LRCK signal (open)
34	DVDD	—	Power supply +5V (digital)
35	DVSS	—	Ground terminal (digital)
36	TEST0	I/O	ENCERR signal output (pull-up)
37	TEST1	I/O	TESTOUT signal output (pull-up)
38	TEST2	I/O	TESTIN signal input (ground)
39	WRITE	I	Write strategy signal control terminal
40	SSP2	O	Servo sampling pulse output
41	SSP1	O	Servo sampling pulse output
42	RAPC/C2F	O	Laser sampling pulse output
43	WAPC	O	Laser sampling pulse output
44	H11TO/FSQ	O	Running OPC sampling pulse output
45	LDH/WRQ	O	LD control signal output for recording Not used (open)
46	ATEST3	O	Analog block test signal output (WE2)
47	ATEST1	O	Analog block test signal output Not used (open)
48	WDAT	O	LD control signal output for recording
49	NWDAT	O	LD control signal output for recording
50	DVDD	—	Power supply +5V (digital)
51	DVSS	—	Ground terminal (digital)
52	AVDD	—	Power supply 3.3V (analog) for the write strategy
53	AVSS	—	Ground terminal (analog)
54	R1	I	Analog terminal for the write strategy (fixed at "H")
55	VCNT1	I	Analog terminal for the write strategy
56	DCNT1	I	Analog terminal for the write strategy Not used (open)
57	PD1	O	Analog terminal for the write strategy
58	ZINT	O	Interrupt request signal output to the μ com (IC501)
59 to 66	D0 to D7	I/O	Data input/output with the μ com (IC501)
67	SRSTNBY	I	Back up control terminal for CD-TEXT SRAM
68	AVDD	—	Power supply +3.3V (analog) for CD-TEXT SRAM
69	AVSS	—	Ground terminal (analog)
70 to 77	SUA0 to SUA7	I	Command register selection address signal input
78	ZRD	I	Data read out signal input from the μ com (IC501)
79	ZCS	I	Chip select signal input from the μ com (IC501)
80	ZWR	I	Data write signal input from the μ com (IC501)
81	ZRESET	I	Reset signal input

Pin No.	Pin Name	I/O	Description
82	DVDD	—	Power supply +5V (digital)
83	DVSS	—	Ground terminal (digital)
84	DVDD	—	Power supply +3.3V (digital)
85	DVSS	—	Ground terminal (digital)
86	AVDD	—	Power supply +3.3V (analog) for slice level setting
87	AVSS	—	Ground terminal (analog)
88, 89	SLCIST1, SLCIST2	I	EFM slice level setting signal input
90 to 93	SLCO0 to SLCO3	O	EFM slice level output
94	EFMIN	I	EFM signal input
95	EFMIN2	I	EFM signal input Not used (open)
96	DSLB	O	PWM signal output for SLC Not used (open)
97	JITIN	I	Jitter judgement input
98	JITC	O	Jitter output
99	RPO	O	P/N balance adjustment terminal
100	OPP	I	P/N balance adjustment terminal
101	PCKISTF	I	Charge pump terminal for the frequency comparison
102	PCKISTP	I	Charge pump terminal for the phase comparison
103	PD0	O	Filter for the charge pump
104	AVDD	—	Power supply +3.3V (analog) for the charge pump
105	AVSS	—	Ground terminal (analog)
106 to 108	PDS1 to PDS3	O	Charge pump selection terminal Not used (open)
109	FR	I	VCO frequency setting input terminal
110	AD0	I	AD input
111	RREC	I	FOK signal input for optical judgement
112	FE	I	Focus error signal input
113	TE	I	Tracking error signal input
114	VREF	I	Servo system reference voltage input
115	AD1	I	AD input
116	AVDD	—	Power supply +5V (analog) for the servo block AD/DA
117	AVSS	—	Ground terminal (analog)
118, 119	DA0, DA1	O	DA output Not used (open)
120	DVDD	—	Power supply +3.3V (digital)
121	DVSS	—	Ground terminal (digital)
122	DA2	O	DA output
123	TDO	O	Tracking signal output
124	FDO	O	Focus signal output
125	SLDO	O	Sled signal output
126	SPDO	O	Spindle signal output
127	SUBSYNC	O	Sub-code sync signal output
128	ZRFDET	I	Judgement signal input for the existence of RF signal (fixed at "H")
129	SHOCK	O	Shock detection signal output Not used (open)
130	LOCK	O	PLL lock status signal output Not used (open)
131	DEF	I	Defect detection signal input
132	HFL(MIRR)	I	MIRR detection signal input
133	TES	I	Tracking zero cross signal input
134	EFMO	O	EFM signal output after formation of 2 values (open)
135	LDON	O	Laser control signal output for play back
136	FG	I	Rotation monitor signal input from the spindle motor driver
137	PCK2	O	Bit clock output for EFM playback
138	DVDD	—	Power supply +5V (digital)

Pin No.	Pin Name	I/O	Description
139	DVSS	—	Ground terminal (digital)
140	ATIPSYNC	O	ATIP sync signal output
141	BIDATA	I/O	ATIP demodulator input/output (fixed at "L")
142	BICLK	I/O	ATIP demodulator input/output (fixed at "L")
143	WOBBLE	I	ATIP demodulator input/output
144	JITERR	O	Clock jitter suppressor error signal output Not used (open)
145	JITPCO	O	PLL phase frequency comparator output
146	JITLPFI	I	PLL low-pass filter input terminal
147	JITLPFO	O	PLL low-pass filter output terminal
148	JITVCOIN	I	PLL, VCO clock input terminal
149	AVSS	—	Ground terminal (analog)
150	AVDD	—	Power supply +3.3V (analog) for the clock jitter suppressor
151	DIRRS	I	VCO gain control signal input
152	DIRVCO	I	VCO free running oscillation frequency control signal input
153	DIRLPF	O	Loop filter setting terminal
154	AVDD	—	Power supply +3.3V (analog) for the DIR
155	AVSS	—	Ground terminal (analog)
156	DVDD	—	Power supply +5V (digital)
157	DVSS	—	Ground terminal (digital)
158	DIRERR	O	PLL lock data error output
159	DIN1	I	Digital data input from the IC500
160	DIN2	I	Digital data input from the IC101
161, 162	DIN3, DIN4	I	Digital data input Not used (open)
163	DACCKOUT	O	DAC clock output Not used (open)
164	ENCKOUT	O	RF processor clock output Not used (open)
165	CDCKOUT	O	CD decoder clock output Not used (open)
166	AUXMCKIN	I	External clock input (fixed at "L")
167	XTALCK	I	Crystal oscillation circuit input
168	XTAL	O	Crystal oscillation circuit output
169	PDO0	O	Charge pump output
170	VCNT0	I	VCO control voltage input
171	R0	I	VCO bias resistor terminal
172	AVDD	—	Power supply +3.3V (analog) for the clock
173	AVSS	—	Ground terminal (analog)
174	TEST4	I/O	ADCKOUT clock output
175	ROUT	O	DAC output Not used (open)
176	AVDD	—	Power supply +5V (analog) for the internal DAC
177	AVSS	—	Ground terminal (analog)
178	LOUT	O	DAC output Not used (open)
179	DACDATA	O	DAC serial data output Not used (open)
180	DACLCK	O	DAC LRCK output Not used (open)
181	DACBCK	O	DAC BCK output Not used (open)
182	DVDD	—	Power supply +3.3V (digital)
183	DVSS	—	Ground terminal (digital)
184	ADCDATA	I	ADC serial data input Not used (fixed at "L")
185	ADCCK	O	ADC BCK output Not used (open)
186	ADCLRCK	O	ADC LRCK output Not used (open)
187	AUXDATA	I	External serial data input Not used (open)
188	AUXBCK	I	External BCK input Not used (fixed at "L")
189	AUXLRCK	I	External LRCK input Not used (fixed at "L")

Pin No.	Pin Name	I/O	Description
190	DVDD	—	Power supply +5V (digital)
191	DVSS	—	Ground terminal (digital)
192	ADCSTBY	O	ADC standby signal output
193	AUXTX	I	DIT data input Not used (fixed at “L”)
194	DITOUT	O	DIT data output
195	TEST3	I/O	Used as EXTDACEMP input (fixed at “L”)
196	SBDATA	I/O	Sub-code I/F serial data input/output (fixed at “L”)
197	CLCK	I/O	Sub-code I/F data shift clock input/output (fixed at “L”)
198	SFSY	I/O	Sub-code I/F frame sync signal input/output (fixed at “L”)
199	SBSY	I/O	Sub-code I/F block sync signal input/output (fixed at “L”)
200	ZRAS	O	Row address strobe signal output to the buffer RAM for audio data delay
201	ZCAS	O	Column address strobe signal output to the buffer RAM for audio data delay
202	ZWE	O	Write enable signal output to the buffer RAM for audio data delay
203	ZOE	O	Read enable signal output to the buffer RAM for audio data delay
204 to 207	RA0 to RA3	O	Address signal output to the buffer RAM for audio data delay
208	DVDD	—	Power supply +3.3V (DRAM I/F)

• IC501 HD64F3064BFB25 μCOM (CDR Board)

Pin No.	Pin Name	I/O	Description
1	VCL	—	Capacitor connection terminal for the internal power supply
2	XCSCDR	O	Chip select signal output to the IC201
3 to 5	NU	—	Not used (fixed at "H")
6	XRSTRFP	O	Register reset signal output to the IC101
7	XREQI	I	Data request signal from the IC1
8	XRDYO	O	Data ready signal to the IC1
9	XRSTCDR	O	Reset signal to the IC201
10	FWE	I	Flash memory write enable signal input
11	VSS	—	Ground terminal
12	SDATAO	O	Serial data output to the IC101 and IC502
13	SDATAO(HOST)	O	Serial data output to the IC1
14	SDATAI(PROM)	I	Serial data input from the IC502
15	SDATAI(HOST)	I	Serial data input from the IC1
16	SCLKO	O	Clock output to the IC101 and IC502
17	SUB_SYNC	I	Sub-code sync signal input from the IC201
18	RSBETA	O	β measurement circuit reset signal output
19, 20	NU	—	Not used (fixed at "H")
21	MIRR/XRC	O	MIRR or RC selection signal output
22	VSS	—	Ground terminal
23	AGCON	O	AGC enable signal output to the IC101
24	XRW/R	O	CD-RW selection signal output to the IC101
25	VRDSW	O	Read laser driver time constant selection switch control signal output to the IC101
26	VWDSW	O	Write laser driver time constant selection switch control signal output to the IC101
27 to 34	D8 to D15	I/O	Data bus with the IC201
35	VCC	—	Power supply (+5V)
36 to 43	A0 to A7	O	Command register selection address signal output to the IC201
44	VSS	—	Ground terminal
45 to 56	A8 to A19	O	Not used (fixed at "H")
57	VSS	—	Ground terminal
58	NU	—	Not used terminal
59	CS	O	Chip select signal output to the IC502
60	XLAT	O	Data latch signal output to the IC101
61	ATIPSYNC	I	ATIP SYNC signal input from the IC201
62	XSTBY	I	Not used (fixed at "H")
63	XREST	I	System reset signal input
64	XP.DOWN	I	Not used
65	VSS	—	Ground terminal
66	EXTAL	I	Ceramic resonator connection terminal
67	XTAL	I	Ceramic resonator connection terminal
68	VCC	—	Power supply (+5V)
69	XAS	O	Not used
70	XRD	O	Data read signal output to the IC201
71	XHWR	O	Data write signal output to the IC201
72	XLWR	O	Not used
73	MD0(H)	I	Mode selector (fixed at "H")
74	MD1(L)	I	Mode selector (fixed at "L")
75	MD2	I	Mode selector (normally fixed at "H")
76	AVCC	—	Power supply (+5V) for the A/D converter
77	AVREF	—	Reference voltage for the A/D converter
78	KEY	I	Key scan signal input

Pin No.	Pin Name	I/O	Description
79	BCENT	I	Center signal input from the IC101
80	PHBETA	I	β signal top level signal input from the IC101
81	BHBETA	I	β signal bottom level signal input from the IC101
82	VREF	I	Reference voltage input terminal
83	MPX	I	Monitor multiplexer signal input from the IC101
84	TMP	I	THERMOUT signal input
85	VWDC2	O	VWDC2 signal output to the optical pick-up
86	AVSS	—	Ground terminal for the A/D converter
87	XINTCDR	I	Interrupt request signal input from the IC201
88	RECD	I	Recorded block detection signal input from the IC101
89	XTAND	I	Tracking failure detection signal input from the IC101
90	SPFG	I	Not used
91	XIN/EXT	I	RS-232C "H" detection signal input
92	VSS	—	Ground terminal
93	SLFG	I	ENCOUT signal input
94	TZC	I	Tracking zero cross detection signal input from the IC101
95	SPFG	I	FG signal input from the motor driver (IC172)
96	XMMUTE	O	Muting signal output to the IC171 and IC172
97	INSW	I	LOAD IN switch (S170) signal input
98	OUTSW	I	LOAD OUT switch (S171) signal input
99	REV	O	Loading motor control signal output to the IC171
100	FWD	O	Loading motor control signal output to the IC171

SECTION 7

EXPLODED VIEWS

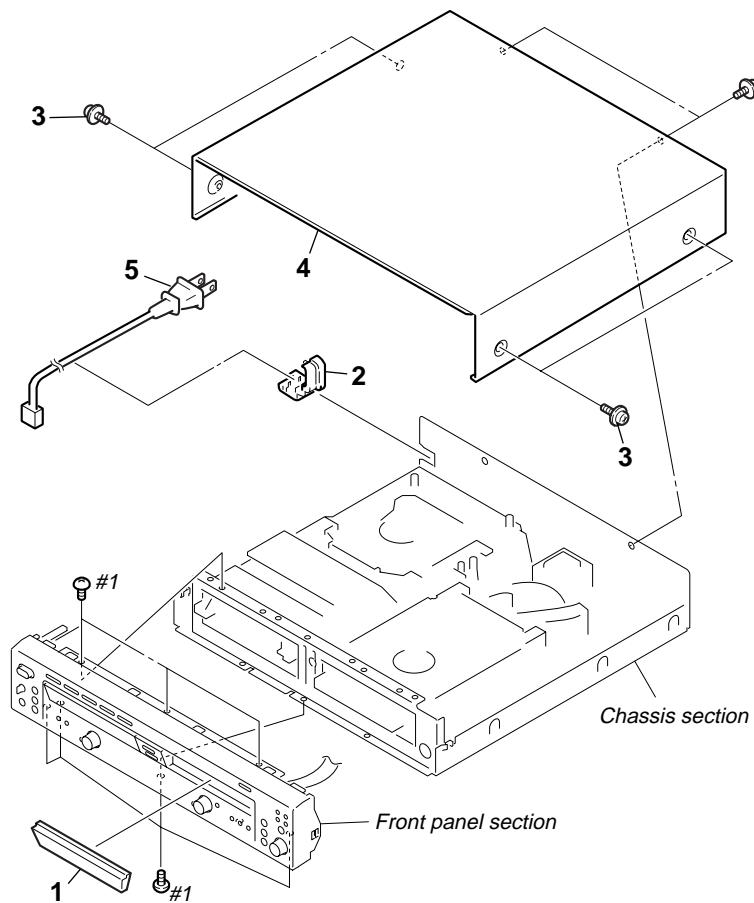
NOTE:

- -XX, -X mean standardized parts, so they may have some differences from the original one.
- Items marked “*” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Accessories are given in the last of this parts list.
- Abbreviation
CND : Canadian model

The components identified by mark \triangle or dotted line with mark \triangle are critical for safety. Replace only with part number specified.

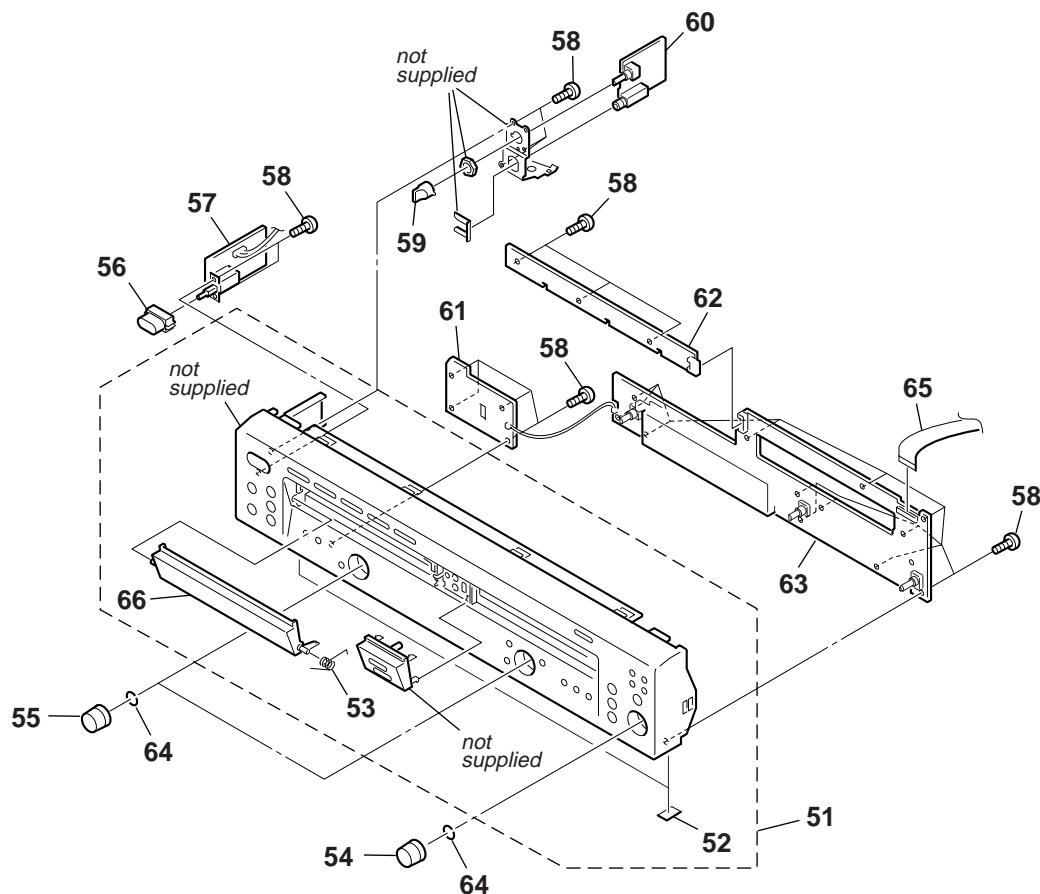
Les composants identifiés par une marque \triangle sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

7-1. Case Section



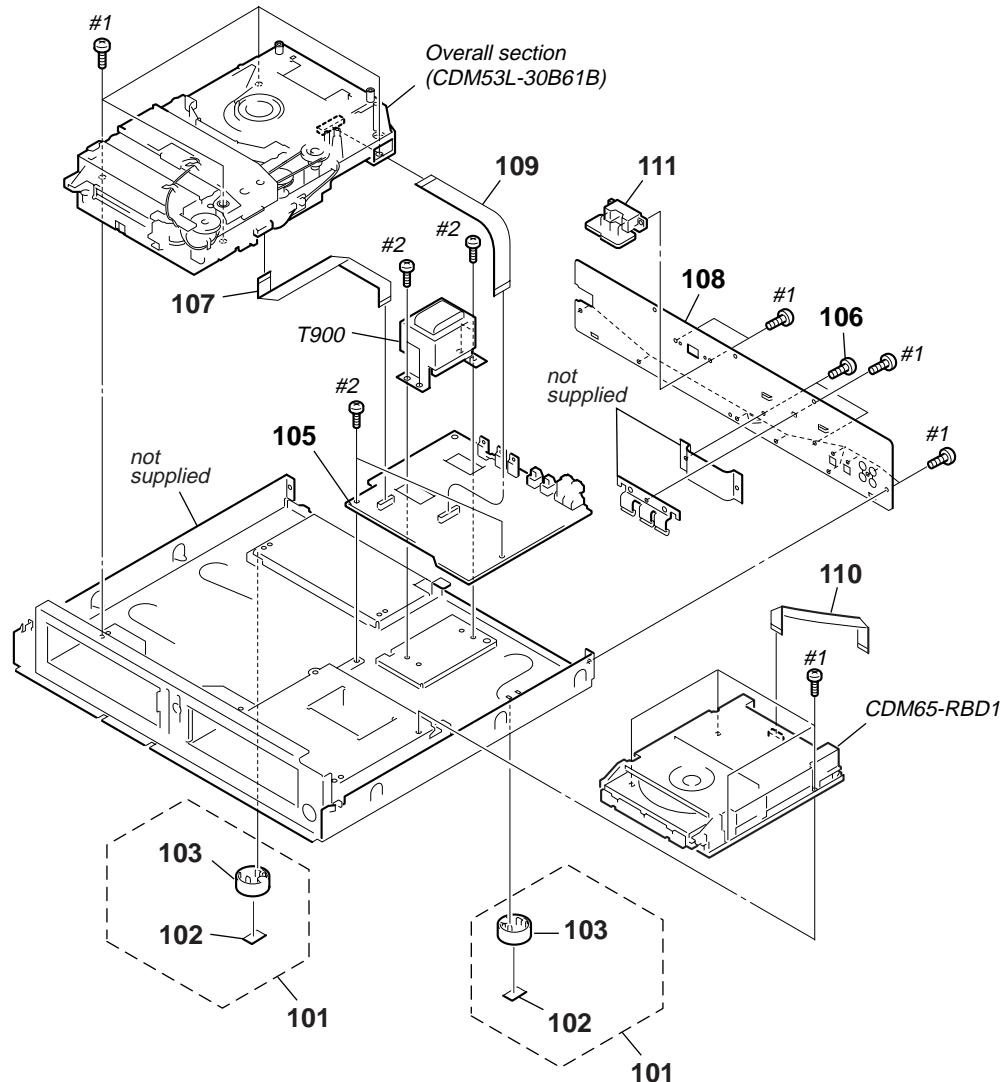
Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
1	4-238-393-01	PANEL (CDR), LOADING		4	4-231-686-11	CASE (409538)	
2	3-703-571-11	BUSHING (S) (4516), CORD (E)		\triangle 5	1-783-525-21	CORD, POWER (TRACKING) (E)	
* 2	3-703-244-00	BUSHING (2104), CORD (US,CND)		\triangle 5	1-783-531-31	CORD, POWER (US,CND)	
3	4-210-291-01	SCREW (CASE 3 TP2)		#1	7-685-646-79	SCREW +BVTP 3X8 TYPE2 TT(B)	

7-2. Front Panel Section



Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
51	X-4954-476-1	PANEL ASSY, FRONT (US,CND)		59	3-931-378-51	KNOB (F10)	
51	X-4954-477-1	PANEL ASSY, FRONT (E)		60	1-683-868-11	HP BOARD	
52	4-977-358-11	CUSHION		61	1-683-867-11	CD-SW BOARD	
53	4-241-393-01	SPRING, TORSION		62	1-683-872-11	LED BOARD	
54	4-238-396-11	KNOB (AMS)		63	A-4727-910-A	DISPLAY BOARD, COMPLETE (US,CND)	
55	4-238-396-01	KNOB (AMS)		63	A-4727-916-A	DISPLAY BOARD, COMPLETE (E)	
56	4-231-973-01	BUTTON (POWER)		64	3-354-981-11	SPRING (SUS), RING	
57	1-683-869-11	POWER-SW BOARD		65	1-823-923-11	WIRE (FLAT TYPE)(21 CORE)	
58	4-951-620-01	SCREW (2.6X8), +BVTP		66	4-238-392-01	LID (5 CD)	

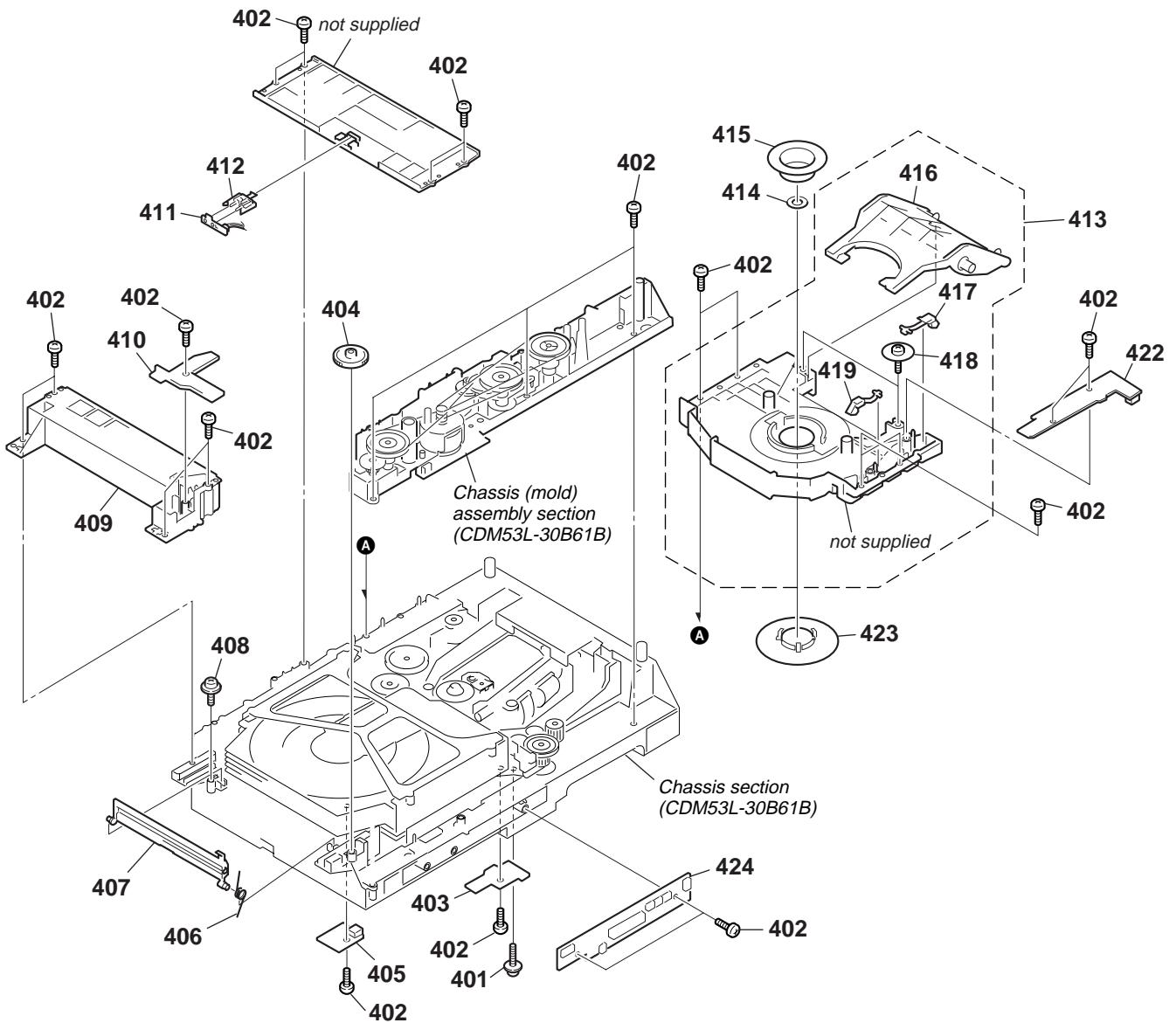
7-3. Chassis Section



Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
101	X-4953-448-1	FOOT ASSY		108	4-238-401-31	PANEL, BACK (E)	
102	4-977-358-11	CUSHION		109	1-823-924-11	WIRE (FLAT TYPE)(23 CORE)	
103	4-232-237-01	FOOT (DIA. 30)		110	1-823-922-11	WIRE (FLAT TYPE)(11 CORE)	
105	A-4727-907-A	MAIN BOARD, COMPLETE (US,CND)		111	A-4727-920-A	VOL-SEL BOARD	
105	A-4727-914-A	MAIN BOARD, COMPLETE (E)		△ T900	1-437-623-11	TRANSFORMER, POWER (US,CND)	
106	3-703-249-01	SCREW, S TIGHT, +PTTWH 3X6		△ T900	1-437-624-11	TRANSFORMER, POWER (E)	
107	1-823-925-11	WIRE (FLAT TYPE)(17 CORE)		#1	7-685-646-79	SCREW +BVT 3X8 TYPE2 TT(B)	
108	4-238-401-01	PANEL, BACK (US)		#2	7-685-871-01	SCREW +BVTT 3X6 (S)	
108	4-238-401-11	PANEL, BACK (CND)					

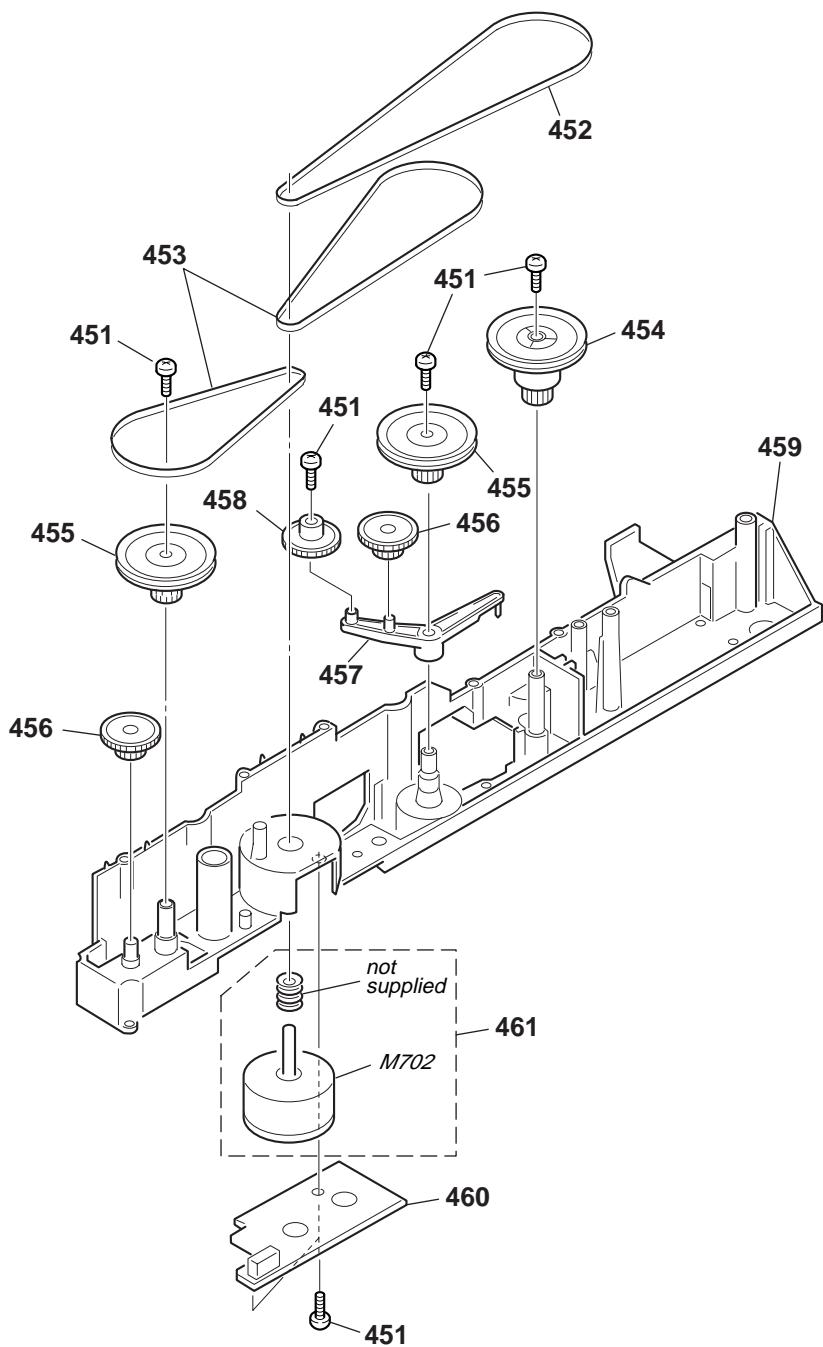
The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.
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7-4. Overall Section (CDM53L-30B61B)



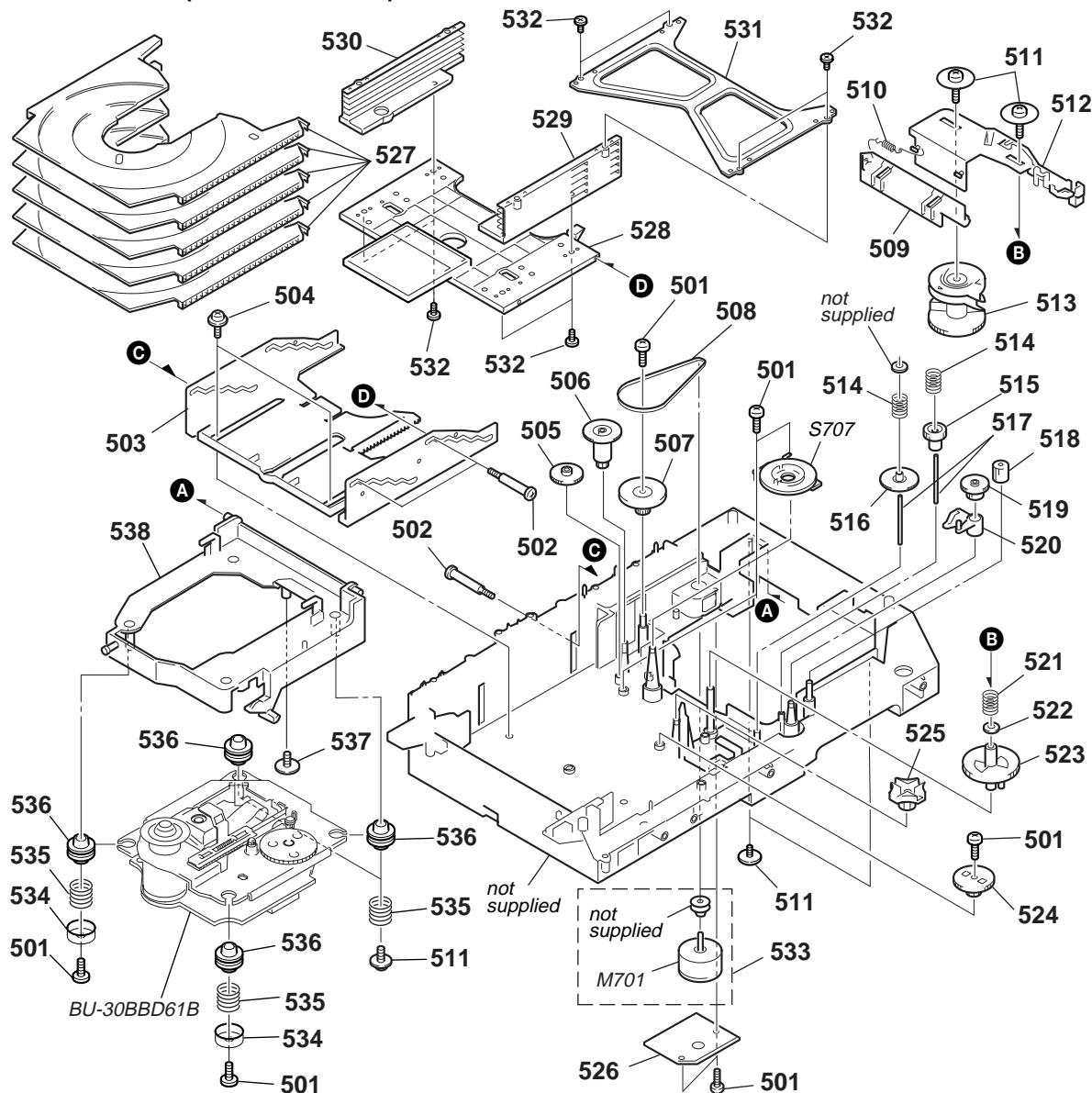
Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
401	3-341-549-01	SCREW(2.6X12)(DIA.7.5),+PTP WH		412	4-964-461-02	HOLDER (SENSOR)	
402	4-218-253-11	SCREW (M2.6), +BTP		413	A-4746-928-A	BASE (MAGNET) ASSY, FITTING	
403	1-675-724-11	INIT/COUNT SW BOARD		414	4-228-414-01	BRACKET (YOKE)	
404	4-211-215-01	GEAR (EJECT)		415	4-227-513-01	PULLEY (4SB)	
405	1-675-726-11	SENSOR BOARD		416	4-222-783-01	LEVER (LIFTER)	
406	4-212-676-01	SPRING (LID), TORSION		417	4-221-530-01	LEVER (DETECTION C)	
407	4-221-532-11	LID (DISC)		418	4-985-672-01	SCREW (+PTPWH M2.6), FLOATING	
408	4-933-134-01	SCREW (M2.6), +PTPWH		419	4-221-528-01	LEVER (DETECTION A)	
409	A-4672-909-C	BASE (GUIDE) ASSY, FITTING		422	1-675-723-11	IN SW BOARD	
410	1-675-725-11	OUT SW BOARD		423	X-4952-916-1	PULLEY (FK) ASSY, CHUCKING	
411	1-675-727-11	SENSOR 2 BOARD		424	1-675-722-11	CONNECTOR BOARD	

7-5. Chassis (Mold) Assembly Section (CDM53L-30B61B)

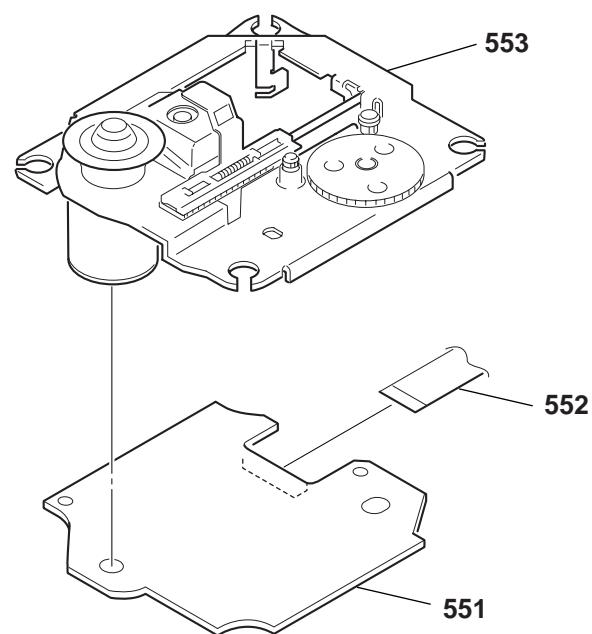


Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
451	4-218-253-11	SCREW (M2.6), +BTTP		457	4-211-228-01	LEVER (GOOSENECK)	
452	4-211-235-01	BELT (COMMUNICATION)		458	4-214-130-01	GEAR (TRAY)	
453	4-241-745-01	BELT (LOADING 1)		459	4-221-505-11	CHASSIS (MOLD B)	
454	4-211-231-01	PULLEY (MODE)		460	1-675-728-11	LOAD MOTOR BOARD	
455	4-211-214-01	PULLEY (LD)		461	X-4950-342-1	MOTOR (LOADING) ASSY	
456	4-211-232-01	GEAR (LD DECELERATION)		M702	1-763-790-11	MOTOR, DC (LOADING)	

7-6. Chassis Section (CDM53L-30B61B)

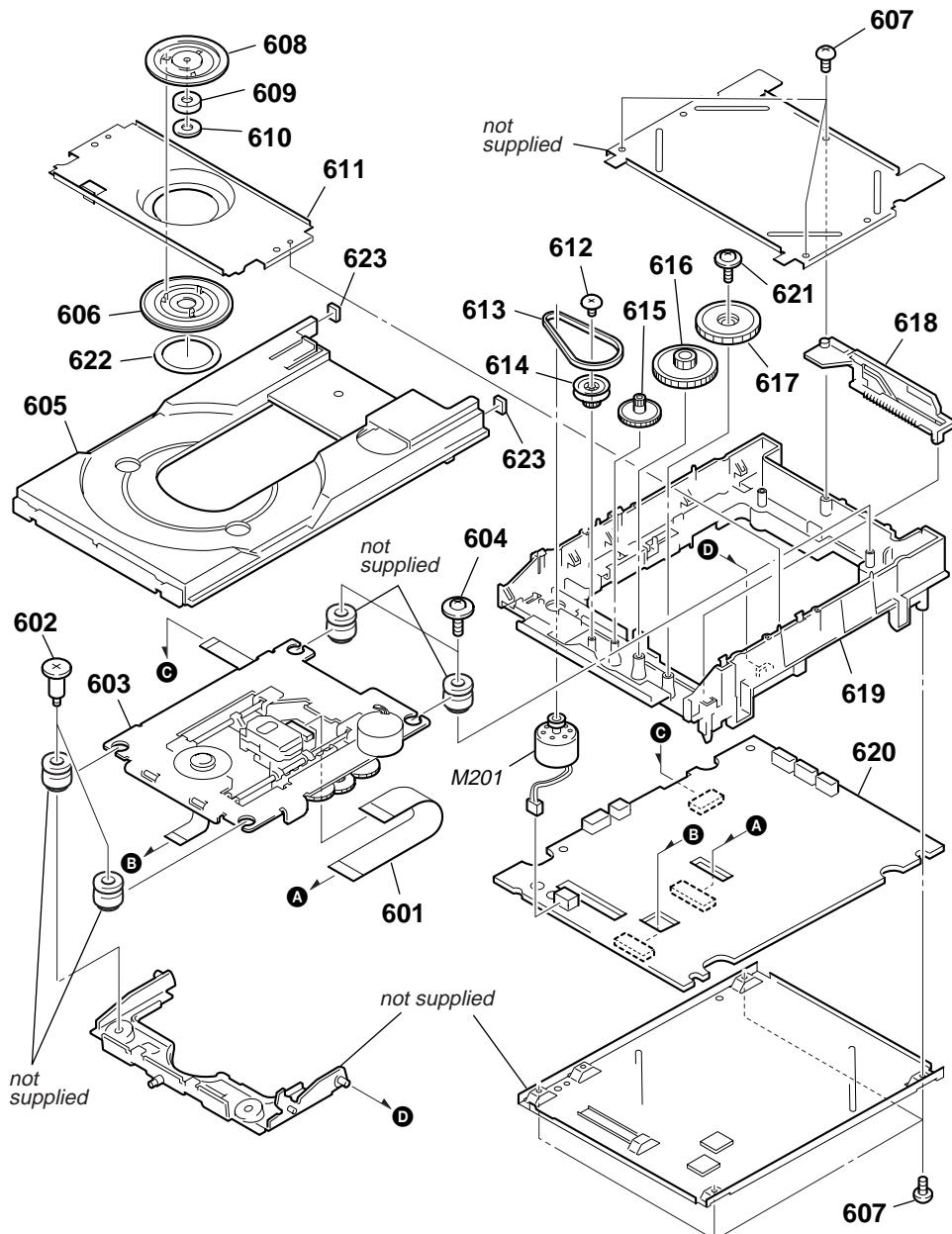


Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
501	4-218-253-11	SCREW (M2.6), +BTPP		521	4-216-879-01	SPRING (GEAR), COMPRESSION	
502	4-211-244-01	SCREW, STEP		522	3-701-446-21	WASHER	
503	4-211-223-01	SLIDER (U/D)		523	4-211-218-01	GEAR (GEAR A)	
504	4-933-134-01	SCREW (M2.6), +PTPWH		524	4-211-220-01	GEAR (U/D SLIDER)	
505	4-211-215-01	GEAR (EJECT)		525	4-211-219-01	GEAR (GEAR B)	
506	4-211-232-01	GEAR (MODE DECELERATION)		526	1-675-729-11	CLAMP MOTOR BOARD	
507	4-211-214-01	PULLEY (LD)		527	4-211-212-51	TRAY (SUB)	
508	4-211-237-01	BELT (MODE)		528	4-221-504-01	BASE (STOCKER), FITTING	
509	4-212-677-01	SLIDER (SHUTTER)		529	4-211-211-01	STOCKER (R)	
510	4-212-678-01	SPRING (SHUTTER), TENSION		530	4-211-210-01	STOCKER (L)	
511	4-985-672-01	SCREW (+PTPWH M2.6), FLOATING		531	4-211-234-01	BRACKET (STOCKER T)	
512	4-211-233-01	SLIDER (SELECTION)		532	4-218-253-21	SCREW (M2.6), +BTPP	
513	4-211-230-01	GEAR (CHUCKING)		533	X-4950-341-1	MOTOR (CLAMP) ASSY	
514	4-211-245-01	SPRING, COMPRESSION		534	4-231-151-01	STOPPER (BU)	
515	4-211-221-01	GEAR (LD MOVABLE)		535	4-227-045-11	SPRING (INSULATOR), COIL	
516	4-211-217-01	GEAR (SELECTION)		536	4-240-820-01	INSULATOR (B)(BU-30B)	
517	4-211-242-11	SHAFT (SELECTION GEAR)		537	4-227-899-01	SCREW (DIA.12), FLOATING	
518	4-211-240-01	GEAR (LD DECELERATION B)		538	X-4954-297-2	HOLDER (BU30) ASSY	
519	4-211-216-01	GEAR (RELAY)		M701	1-763-790-11	MOTOR, DC (ELEVATOR)	
520	4-211-241-01	LEVER (SELECTION)		S707	1-418-045-01	ENCODER, ROTARY	

7-7. Optical Block Section

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Remarks</u>	<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Remarks</u>
551	A-4727-463-A	BD BOARD, COMPLETE		553	A-4735-885-A	BU-30B ASSY	
552	1-782-817-11	WIRE (FLAT TYPE)(16 CORE)					

7-8. CDM65-RBD1



Ref. No.	Part No.	Description	Remarks
601	1-823-651-11	CABLE, FLEXIBLE FLAT (32 CORE)	
602	4-237-168-01	SCREW, STEP	
△ 603	8-583-104-01	OPTICAL PICK-UP (KRM-220CAA)	
604	4-237-167-01	SCREW (2X9) (G WITH),+P TAPPIN	
605	4-237-181-01	TRAY	
606	4-237-174-01	PULLEY (MAG)	
607	4-951-620-01	SCREW (2.6X8), +BVTP	
608	4-240-988-02	PULLEY (UPPER), PRESS	
* 609	1-452-958-11	MAGNET (CHUCKING)	
* 610	4-974-710-11	YOKE, PULLEY	
611	4-237-172-01	HOLDER (MG)	
612	4-974-711-01	SCREW (2X5)(P TYIGHT),(+)PTTWH	
613	4-999-537-01	BELT (LOADING)	
614	4-237-176-02	PULLEY (CG)	

Ref. No.	Part No.	Description	Remarks
615	4-237-177-01	GEAR (A)	
616	4-237-178-02	GEAR (B)	
617	4-237-179-02	GEAR (C)	
618	4-237-180-01	CAM (CH)	
619	4-237-182-01	CHASSIS	
620	A-4727-459-A	CDR BOARD, COMPLETE	
621	3-341-549-01	SCREW(2.6X8)(DIA.7.5),+ PTP WH	
622	4-240-987-01	SHEET (DR)	
623	4-232-682-01	CUSHION (66)	
M201	A-4735-557-A	MOTOR ASSY (LOADING)	

The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque △ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

SECTION 8

ELECTRICAL PARTS LIST

NOTE:

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- CAPACITORS:
uF: μ F

- RESISTORS
All resistors are in ohms.
METAL: metal-film resistor
METAL OXIDE: Metal Oxide-film resistor
F: nonflammable
- COILS
uH: μ H
- SEMICONDUCTORS
In each case, u: μ , for example:
uA...: μ A..., uPA..., μ PA...,
uPB..., μ PB..., uPC..., μ PC...,
uPD..., μ PD...

- Abbreviation
CND : Canadian model

When indicating parts by reference number, please include the board name.

The components identified by mark \triangle or dotted line with mark \triangle are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque \triangle sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description		Remarks		Ref. No.	Part No.	Description		Remarks										
	A-4727-463-A	BD BOARD, COMPLETE		*****		C212	1-164-315-11	CERAMIC CHIP	470PF	5.00%	50V									
< CAPACITOR >																				
C101	1-164-315-11	CERAMIC CHIP	470PF	5.00%	50V	C213	1-115-414-11	CERAMIC CHIP	820PF	5.00%	25V									
C102	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V	C214	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V									
C103	1-164-315-11	CERAMIC CHIP	470PF	5.00%	50V	C215	1-117-863-11	CERAMIC CHIP	0.47uF	10.00%	6.3V									
C104	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V	C216	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V									
C107	1-162-921-11	CERAMIC CHIP	33PF	5%	50V	C218	1-164-360-11	CERAMIC CHIP	0.1uF		16V									
C108	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C219	1-164-360-11	CERAMIC CHIP	0.1uF		16V									
C109	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C221	1-164-360-11	CERAMIC CHIP	0.1uF		16V									
C110	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V	C222	1-164-360-11	CERAMIC CHIP	0.1uF		16V									
C111	1-126-607-11	ELECT CHIP	47uF	20%	4V	C223	1-125-838-11	CERAMIC CHIP	2.2uF	10%	6.3V									
C112	1-126-607-11	ELECT CHIP	47uF	20%	4V	C224	1-164-360-11	CERAMIC CHIP	0.1uF		16V									
C113	1-126-209-11	ELECT CHIP	100uF	20.00%	4V	C225	1-164-360-11	CERAMIC CHIP	0.1uF		16V									
C114	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V	C227	1-164-360-11	CERAMIC CHIP	0.1uF		16V									
C115	1-126-205-11	ELECT CHIP	47uF	20%	6.3V	C229	1-164-360-11	CERAMIC CHIP	0.1uF		16V									
C117	1-164-360-11	CERAMIC CHIP	0.1uF		16V	C230	1-113-682-11	TANTAL. CHIP	33uF	20.00%	10V									
C118	1-115-156-11	CERAMIC CHIP	1uF		10V	C231	1-128-995-21	ELECT CHIP	100uF	20%	10V									
C119	1-115-156-11	CERAMIC CHIP	1uF		10V	C232	1-164-360-11	CERAMIC CHIP	0.1uF		16V									
C120	1-126-607-11	ELECT CHIP	47uF	20%	4V	C234	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V									
C151	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V	C235	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V									
C152	1-115-416-11	CERAMIC CHIP	0.001uF	5.00%	25V	C236	1-109-982-11	CERAMIC CHIP	1uF	10.00%	10V									
C153	1-164-360-11	CERAMIC CHIP	0.1uF		16V	< CONNECTOR >														
C163	1-117-681-11	ELECT CHIP	100uF	20.00%	16V	CN101	1-784-834-21	CONNECTOR, FFC (LIF (NON-ZIF)) 23P												
C164	1-164-360-11	CERAMIC CHIP	0.1uF		16V	CN102	1-794-424-11	CONNECTOR, FCC/FPC 16P												
C165	1-124-779-00	ELECT CHIP	10uF	20%	16V	< FERRITE BEAD >														
C166	1-164-360-11	CERAMIC CHIP	0.1uF		16V	FB101	1-500-445-21	FERRITE	0uH											
C167	1-162-927-11	CERAMIC CHIP	100PF	5%	50V	< IC >														
C168	1-164-360-11	CERAMIC CHIP	0.1uF		16V	IC101	8-752-408-73	IC	CXD3068Q											
C169	1-164-360-11	CERAMIC CHIP	0.1uF		16V	IC102	8-759-713-71	IC	AN41050											
C171	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	IC103	8-752-089-74	IC	CXA2581N-T4											
C178	1-164-360-11	CERAMIC CHIP	0.1uF		16V	IC104	8-759-833-99	IC	TC74HC4052AFT (EL)											
C179	1-164-360-11	CERAMIC CHIP	0.1uF		16V	IC105	8-759-834-29	IC	MC74VHC1G04DFT1											
C182	1-128-995-21	ELECT CHIP	100uF	20%	10V	IC201	8-759-460-72	IC	BA033FP-E2											
C201	1-126-246-11	ELECT CHIP	220uF	20%	4V	< COIL >														
C202	1-164-360-11	CERAMIC CHIP	0.1uF		16V	L171	1-412-967-31	INDUCTOR	0.1uH											
C203	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V	L230	1-469-981-21	FERRITE	0uH											
C204	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V	< TRANSISTOR >														
C205	1-164-360-11	CERAMIC CHIP	0.1uF		16V	< TRANSISTOR >														
C207	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	Q101	8-729-049-31	TRANSISTOR	2SB710A-RTX											
C209	1-164-230-11	CERAMIC CHIP	220PF	5.00%	50V															
C210	1-115-414-11	CERAMIC CHIP	820PF	5.00%	25V															
C211	1-117-863-11	CERAMIC CHIP	0.47uF	10.00%	6.3V															

Ref. No.	Part No.	Description			Remarks	Ref. No.	Part No.	Description			Remarks
< RESISTOR >						< VARIABLE RESISTOR >					
R102	1-216-835-11	METAL CHIP	15K	5%	1/16W	RV101	1-223-997-21	RES, CARBON ADJ VAR 47K			
R103	1-216-845-11	METAL CHIP	100K	5%	1/16W						
R104	1-216-835-11	METAL CHIP	15K	5%	1/16W						
R105	1-216-821-11	METAL CHIP	1K	5%	1/16W						
R109	1-216-846-11	METAL CHIP	120K	5%	1/16W	X201	1-767-518-11	VIBRATOR, CRYSTAL 33.8688 MHz			

R111	1-216-846-11	METAL CHIP	120K	5%	1/16W						
R112	1-216-840-11	METAL CHIP	39K	5%	1/16W						
R113	1-218-701-11	RES-CHIP	2.4K	5%	1/10W						
R114	1-218-745-11	RES-CHIP	160K	5%	1/10W						
R115	1-216-839-11	METAL CHIP	33K	5%	1/16W						
R116	1-216-839-11	METAL CHIP	33K	5%	1/16W	C101	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
R118	1-216-864-11	METAL CHIP	0	5%	1/16W	C102	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
R120	1-216-846-11	METAL CHIP	120K	5%	1/16W	C103	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
R122	1-216-845-11	METAL CHIP	100K	5%	1/16W	C104	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
R123	1-216-797-11	METAL CHIP	10	5%	1/16W	C105	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
R124	1-216-797-11	METAL CHIP	10	5%	1/16W	C106	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
R125	1-216-839-11	METAL CHIP	33K	5%	1/16W	C107	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
R126	1-216-839-11	METAL CHIP	33K	5%	1/16W	C108	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
R151	1-216-833-11	METAL CHIP	10K	5%	1/16W	C109	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
R152	1-216-837-11	METAL CHIP	22K	5%	1/16W	C110	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
R165	1-216-864-11	METAL CHIP	0	5%	1/16W	C111	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
R166	1-216-864-11	METAL CHIP	0	5%	1/16W	C112	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
R167	1-216-864-11	METAL CHIP	0	5%	1/16W	C113	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
R168	1-216-864-11	METAL CHIP	0	5%	1/16W	C114	1-164-230-11	CERAMIC CHIP	220PF	5.00%	50V
R169	1-216-864-11	METAL CHIP	0	5%	1/16W	C115	1-164-230-11	CERAMIC CHIP	220PF	5.00%	50V
R170	1-216-864-11	METAL CHIP	0	5%	1/16W	C116	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
R177	1-216-821-11	METAL CHIP	1K	5%	1/16W	C117	1-125-891-11	CERAMIC CHIP	0.47uF	10.00%	10V
R178	1-216-864-11	METAL CHIP	0	5%	1/16W	C118	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
R179	1-216-837-11	METAL CHIP	22K	5%	1/16W	C119	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
R201	1-216-839-11	METAL CHIP	33K	5%	1/16W	C120	1-127-760-11	CERAMIC CHIP	4.7uF	10%	6.3V
R202	1-216-833-11	METAL CHIP	10K	5%	1/16W	C121	1-126-392-11	ELECT CHIP	100uF	20.00%	6.3V
R203	1-216-845-11	METAL CHIP	100K	5%	1/16W	C122	1-162-963-11	CERAMIC CHIP	680PF	10%	50V
R204	1-216-833-11	METAL CHIP	10K	5%	1/16W	C123	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
R205	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	C124	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
R206	1-216-850-11	METAL CHIP	270K	5%	1/16W	C125	1-128-934-91	CERAMIC CHIP	0.33uF	20%	10V
R207	1-218-917-11	RES-CHIP	820K	5%	1/10W	C126	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
R208	1-216-845-11	METAL CHIP	100K	5%	1/16W	C128	1-125-891-11	CERAMIC CHIP	0.47uF	10.00%	10V
R209	1-216-809-11	METAL CHIP	100	5%	1/16W	C129	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
R212	1-216-809-11	METAL CHIP	100	5%	1/16W	C130	1-164-156-11	CERAMIC CHIP	0.1uF		25V
R213	1-216-864-11	METAL CHIP	0	5%	1/16W	C131	1-164-156-11	CERAMIC CHIP	0.1uF		25V
R214	1-216-864-11	METAL CHIP	0	5%	1/16W	C132	1-164-156-11	CERAMIC CHIP	0.1uF		25V
R215	1-216-864-11	METAL CHIP	0	5%	1/16W	C133	1-164-156-11	CERAMIC CHIP	0.1uF		25V
R216	1-216-813-11	METAL CHIP	220	5%	1/16W	C134	1-164-156-11	CERAMIC CHIP	0.1uF		25V
R217	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	C135	1-162-959-11	CERAMIC CHIP	330PF	5%	50V
R218	1-216-821-11	METAL CHIP	1K	5%	1/16W	C136	1-126-391-11	ELECT CHIP	47uF	20.00%	6.3V
R219	1-216-821-11	METAL CHIP	1K	5%	1/16W	C137	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
R226	1-216-809-11	METAL CHIP	100	5%	1/16W	C138	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
R227	1-216-839-11	METAL CHIP	33K	5%	1/16W	C139	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
R228	1-216-849-11	METAL CHIP	220K	5%	1/16W	C140	1-126-390-11	ELECT CHIP	22uF	20.00%	6.3V
R229	1-216-819-11	METAL CHIP	680	5%	1/16W	C141	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V
R230	1-216-864-11	METAL CHIP	0	5%	1/16W	C142	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
R234	1-216-809-11	METAL CHIP	100	5%	1/16W	C143	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V
						C144	1-128-934-91	CERAMIC CHIP	0.33uF	20%	10V
						C145	1-128-934-91	CERAMIC CHIP	0.33uF	20%	10V
						C146	1-128-934-91	CERAMIC CHIP	0.33uF	20%	10V
< NETWORK RESISTOR >						C150	1-164-156-11	CERAMIC CHIP	0.1uF		25V
RN201	1-233-576-11	RES, CHIP NETWORK 100									
RN202	1-233-576-11	RES, CHIP NETWORK 100									

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks		
C151	1-164-156-11	CERAMIC CHIP	0.1uF	25V	C240	1-164-156-11	CERAMIC CHIP	0.1uF	25V
C156	1-164-156-11	CERAMIC CHIP	0.1uF	25V	C241	1-164-156-11	CERAMIC CHIP	0.1uF	25V
C157	1-126-390-11	ELECT CHIP	22uF	20.00% 6.3V	C242	1-164-156-11	CERAMIC CHIP	0.1uF	25V
C158	1-126-390-11	ELECT CHIP	22uF	20.00% 6.3V	C244	1-126-390-11	ELECT CHIP	22uF	20.00% 6.3V
C160	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V	C245	1-125-837-91	CERAMIC CHIP	1uF	10% 6.3V
C178	1-162-968-11	CERAMIC CHIP	0.0047uF	10% 50V	C246	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V
C179	1-164-156-11	CERAMIC CHIP	0.1uF	25V	C247	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V
C180	1-126-395-11	ELECT	22uF	20% 16V	C248	1-164-156-11	CERAMIC CHIP	0.1uF	25V
C181	1-127-573-11	CERAMIC CHIP	1uF	10% 16V	C249	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V
C182	1-127-573-11	CERAMIC CHIP	1uF	10% 16V	C250	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V
C183	1-127-573-11	CERAMIC CHIP	1uF	10% 16V	C251	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V
C184	1-126-395-11	ELECT	22uF	20% 16V	C254	1-164-156-11	CERAMIC CHIP	0.1uF	25V
C185	1-164-156-11	CERAMIC CHIP	0.1uF	25V	C257	1-164-156-11	CERAMIC CHIP	0.1uF	25V
C186	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	C258	1-164-156-11	CERAMIC CHIP	0.1uF	25V
C187	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	C259	1-162-964-11	CERAMIC CHIP	0.001uF	10% 50V
C188	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V	C260	1-162-964-11	CERAMIC CHIP	0.001uF	10% 50V
C189	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V	C262	1-164-156-11	CERAMIC CHIP	0.1uF	25V
C190	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V	C263	1-164-156-11	CERAMIC CHIP	0.1uF	25V
C191	1-162-964-11	CERAMIC CHIP	0.001uF	10% 50V	C268	1-164-156-11	CERAMIC CHIP	0.1uF	25V
C192	1-162-964-11	CERAMIC CHIP	0.001uF	10% 50V	C269	1-126-392-11	ELECT CHIP	100uF	20.00% 6.3V
C193	1-164-156-11	CERAMIC CHIP	0.1uF	25V	C270	1-126-396-11	ELECT CHIP	47uF	20.00% 16V
C194	1-126-395-11	ELECT	22uF	20% 16V	C271	1-126-392-11	ELECT CHIP	100uF	20.00% 6.3V
C200	1-126-390-11	ELECT CHIP	22uF	20.00% 6.3V	C272	1-164-156-11	CERAMIC CHIP	0.1uF	25V
C201	1-164-156-11	CERAMIC CHIP	0.1uF	25V	C273	1-126-391-11	ELECT CHIP	47uF	20.00% 6.3V
C202	1-126-392-11	ELECT CHIP	100uF	20.00% 6.3V	C275	1-164-156-11	CERAMIC CHIP	0.1uF	25V
C203	1-164-156-11	CERAMIC CHIP	0.1uF	25V	C289	1-164-156-11	CERAMIC CHIP	0.1uF	25V
C204	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	C301	1-164-156-11	CERAMIC CHIP	0.1uF	25V
C205	1-126-391-11	ELECT CHIP	47uF	20.00% 6.3V	C302	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V
C206	1-164-156-11	CERAMIC CHIP	0.1uF	25V	C303	1-164-156-11	CERAMIC CHIP	0.1uF	25V
C207	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	C304	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V
C208	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	C501	1-126-396-11	ELECT CHIP	47uF	20.00% 16V
C209	1-164-156-11	CERAMIC CHIP	0.1uF	25V	C502	1-162-964-11	CERAMIC CHIP	0.001uF	10% 50V
C210	1-126-392-11	ELECT CHIP	100uF	20.00% 6.3V	C506	1-162-964-11	CERAMIC CHIP	0.001uF	10% 50V
C212	1-126-390-11	ELECT CHIP	22uF	20.00% 6.3V	C508	1-164-156-11	CERAMIC CHIP	0.1uF	25V
C213	1-164-156-11	CERAMIC CHIP	0.1uF	25V	C509	1-162-964-11	CERAMIC CHIP	0.001uF	10% 50V
C214	1-164-156-11	CERAMIC CHIP	0.1uF	25V	C510	1-164-156-11	CERAMIC CHIP	0.1uF	25V
C216	1-164-156-11	CERAMIC CHIP	0.1uF	25V	C511	1-162-964-11	CERAMIC CHIP	0.001uF	10% 50V
C217	1-164-156-11	CERAMIC CHIP	0.1uF	25V	C512	1-162-964-11	CERAMIC CHIP	0.001uF	10% 50V
C218	1-164-156-11	CERAMIC CHIP	0.1uF	25V	C513	1-164-156-11	CERAMIC CHIP	0.1uF	25V
C219	1-164-156-11	CERAMIC CHIP	0.1uF	25V	C514	1-162-964-11	CERAMIC CHIP	0.001uF	10% 50V
C220	1-164-156-11	CERAMIC CHIP	0.1uF	25V	C517	1-164-156-11	CERAMIC CHIP	0.1uF	25V
C221	1-164-156-11	CERAMIC CHIP	0.1uF	25V	C518	1-164-156-11	CERAMIC CHIP	0.1uF	25V
C222	1-164-156-11	CERAMIC CHIP	0.1uF	25V	C519	1-164-156-11	CERAMIC CHIP	0.1uF	25V
C223	1-164-677-11	CERAMIC CHIP	0.033uF	10.00% 16V	C520	1-164-156-11	CERAMIC CHIP	0.1uF	25V
C224	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	C521	1-164-156-11	CERAMIC CHIP	0.1uF	25V
C225	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	C526	1-164-156-11	CERAMIC CHIP	0.1uF	25V
C226	1-107-826-11	CERAMIC CHIP	0.1uF	10.00% 16V	< CONNECTOR >				
C227	1-162-912-11	CERAMIC CHIP	7PF	0.5PF 50V	CN101	1-784-894-11	CONNECTOR, FFC/FPC 32P		
C228	1-162-969-11	CERAMIC CHIP	0.0068uF	10% 25V	CN102	1-816-220-21	CONNECTOR, FFC/FPC 11P		
C230	1-162-912-11	CERAMIC CHIP	7PF	0.5PF 50V	CN103	1-816-220-21	CONNECTOR, FFC/FPC 11P		
C232	1-162-963-11	CERAMIC CHIP	680PF	10% 50V	CN104	1-770-160-21	PIN, CONNECTOR (PC BOARD) 2P		
C233	1-164-156-11	CERAMIC CHIP	0.1uF	25V	CN110	1-784-370-21	CONNECTOR, FFC/FPC 11P		
C234	1-165-908-91	CERAMIC CHIP	1uF	10% 25V	*				
C235	1-165-176-11	CERAMIC CHIP	0.047uF	10.00% 16V	CN111	1-764-250-11	PIN, CONNECTOR (PC BOARD) 4P		
C236	1-164-156-11	CERAMIC CHIP	0.1uF	25V	CN112	1-784-365-21	CONNECTOR, FFC/FPC 5P		
C237	1-164-156-11	CERAMIC CHIP	0.1uF	25V	CN115	1-770-160-21	PIN, CONNECTOR (PC BOARD) 2P		
C238	1-164-156-11	CERAMIC CHIP	0.1uF	25V	CN121	1-774-731-21	PIN, CONNECTOR (PC BOARD) 5P		
C239	1-164-156-11	CERAMIC CHIP	0.1uF	25V					

Ref. No.	Part No.	Description			Remarks	Ref. No.	Part No.	Description			Remarks
< DIODE >											
D101	8-719-988-61	DIODE	1SS355TE-17			R109	1-216-809-11	METAL CHIP	100	5%	1/16W
D102	8-719-988-61	DIODE	1SS355TE-17			R110	1-216-809-11	METAL CHIP	100	5%	1/16W
< FERRITE BEAD >											
FB101	1-469-379-11	FERRITE	0UH			R111	1-218-883-11	METAL CHIP	33K	0.5%	1/10W
FB102	1-469-379-11	FERRITE	0UH			R112	1-218-879-11	METAL CHIP	22K	0.5%	1/10W
FB103	1-469-379-11	FERRITE	0UH			R113	1-218-855-11	METAL CHIP	2.2K	0.5%	1/10W
< IC >											
IC101	6-701-749-01	IC	AK8567			R114	1-218-847-11	METAL CHIP	1K	0.5%	1/10W
IC102	8-759-058-56	IC	TC7S02FU (TE85R)			R116	1-218-847-11	METAL CHIP	1K	0.5%	1/10W
IC103	8-759-337-41	IC	NJM2902V-TE2			R120	1-216-809-11	METAL CHIP	100	5%	1/16W
IC104	8-759-478-92	IC	TC7SET04FU (TE85R)			R121	1-216-809-11	METAL CHIP	100	5%	1/16W
IC110	8-759-594-95	IC	L4931ABD33-TR			R122	1-216-857-11	METAL CHIP	1M	5%	1/16W
IC150	8-759-673-37	IC	SN74HC00APWR			R123	1-216-864-11	METAL CHIP	0	5%	1/16W
IC171	6-701-746-01	IC	BA5937AEP-E2			R124	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
IC172	8-759-593-08	IC	LB11698H-TE-L			R125	1-216-797-11	METAL CHIP	10	5%	1/16W
IC201	6-701-747-01	IC	LC89587-UK1-E			R126	1-216-864-11	METAL CHIP	0	5%	1/16W
IC202	8-759-597-78	IC	MSM54V16258BSL-40TSK			R127	1-218-883-11	METAL CHIP	33K	0.5%	1/10W
IC204	8-759-058-60	IC	TC7SU04FU (TE85R)			R128	1-218-879-11	METAL CHIP	22K	0.5%	1/10W
IC301	8-759-549-25	IC	SN74LVU04APWR			R131	1-216-864-11	METAL CHIP	0	5%	1/16W
IC302	8-759-196-96	IC	TC7SH08FU-TE85R			R133	1-216-864-11	METAL CHIP	0	5%	1/16W
IC501	6-701-748-01	IC	HD64F3064BFB25			R134	1-218-871-11	METAL CHIP	10K	0.5%	1/10W
IC502	6-801-552-01	IC	BR93LC46RF-WE2			R135	1-218-863-11	METAL CHIP	4.7K	0.5%	1/10W
IC504	8-759-485-79	IC	TC7SET08FU (TE85R)			R136	1-218-871-11	METAL CHIP	10K	0.5%	1/10W
IC505	8-759-599-46	IC	TC7W08FK (TE85R)			R137	1-218-867-11	METAL CHIP	6.8K	0.5%	1/10W
IC506	8-759-485-79	IC	TC7SET08FU (TE85R)			R139	1-216-833-11	METAL CHIP	10K	5%	1/16W
< COIL >											
L101	1-414-398-11	INDUCTOR	10uH			R140	1-216-833-11	METAL CHIP	10K	5%	1/16W
L102	1-414-398-11	INDUCTOR	10uH			R141	1-216-833-11	METAL CHIP	10K	5%	1/16W
L103	1-414-392-41	INDUCTOR	1uH			R142	1-216-833-11	METAL CHIP	10K	5%	1/16W
L202	1-414-392-41	INDUCTOR	1uH			R142	1-216-864-11	METAL CHIP	0	5%	1/16W
L203	1-414-392-41	INDUCTOR	1uH			R151	1-216-864-11	METAL CHIP	100	5%	1/16W
L204	1-414-392-41	INDUCTOR	1uH			R152	1-216-864-11	METAL CHIP	0	5%	1/16W
L205	1-414-392-41	INDUCTOR	1uH			R153	1-216-809-11	METAL CHIP	100	5%	1/16W
L207	1-414-392-41	INDUCTOR	1uH			R154	1-216-809-11	METAL CHIP	100	5%	1/16W
L208	1-414-392-41	INDUCTOR	1uH			R155	1-216-809-11	METAL CHIP	100	5%	1/16W
L301	1-414-392-41	INDUCTOR	1uH			R156	1-216-809-11	METAL CHIP	100	5%	1/16W
L303	1-414-392-41	INDUCTOR	1uH			R157	1-216-797-11	METAL CHIP	10	5%	1/16W
L501	1-414-392-41	INDUCTOR	1uH			R170	1-216-797-11	METAL CHIP	10	5%	1/16W
L503	1-414-392-41	INDUCTOR	1uH			R171	1-216-797-11	METAL CHIP	10	5%	1/16W
< TRANSISTOR >											
Q170	8-729-900-53	TRANSISTOR	DTC114EKA-T146			R172	1-216-797-11	METAL CHIP	10	5%	1/16W
Q501	8-729-900-53	TRANSISTOR	DTC114EKA-T146			R173	1-218-831-11	METAL CHIP	220	0.5%	1/10W
< RESISTOR >											
R101	1-216-809-11	METAL CHIP	100	5%	1/16W	R176	1-216-864-11	METAL CHIP	0	5%	1/16W
R102	1-216-809-11	METAL CHIP	100	5%	1/16W	R177	1-216-864-11	METAL CHIP	0	5%	1/16W
R103	1-216-809-11	METAL CHIP	100	5%	1/16W	R186	1-216-833-11	METAL CHIP	10K	5%	1/16W
R104	1-218-871-11	METAL CHIP	10K	0.5%	1/10W	R187	1-216-833-11	METAL CHIP	10K	5%	1/16W
R105	1-216-864-11	METAL CHIP	0	5%	1/16W	R188	1-216-864-11	METAL CHIP	0	5%	1/16W
R106	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	R189	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R107	1-216-857-11	METAL CHIP	1M	5%	1/16W	R190	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R108	1-216-809-11	METAL CHIP	100	5%	1/16W	R192	1-216-864-11	METAL CHIP	0	5%	1/16W
< TRANSISTOR >											
Q170	8-729-900-53	TRANSISTOR	DTC114EKA-T146			R193	1-220-810-11	RES-CHIP	0.39	1%	1/2W
Q501	8-729-900-53	TRANSISTOR	DTC114EKA-T146			R194	1-216-864-11	METAL CHIP	0	5%	1/16W
< RESISTOR >											
R101	1-216-809-11	METAL CHIP	100	5%	1/16W	R196	1-216-864-11	METAL CHIP	0	5%	1/16W
R102	1-216-809-11	METAL CHIP	100	5%	1/16W	R198	1-216-864-11	METAL CHIP	0	5%	1/16W
R103	1-216-809-11	METAL CHIP	100	5%	1/16W	R200	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R104	1-218-871-11	METAL CHIP	10K	0.5%	1/10W	R201	1-216-864-11	METAL CHIP	0	5%	1/16W
R105	1-216-864-11	METAL CHIP	0	5%	1/16W	R202	1-216-817-11	METAL CHIP	470	5%	1/16W
R106	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	R203	1-216-864-11	METAL CHIP	0	5%	1/16W
R107	1-216-857-11	METAL CHIP	1M	5%	1/16W	R204	1-216-864-11	METAL CHIP	0	5%	1/16W
R108	1-216-809-11	METAL CHIP	100	5%	1/16W	R205	1-216-864-11	METAL CHIP	0	5%	1/16W
< TRANSISTOR >											
R206	1-216-864-11	METAL CHIP	0	5%	1/16W	R206	1-216-864-11	METAL CHIP	0	5%	1/16W
R207	1-216-813-11	METAL CHIP	220	5%	1/16W	R207	1-216-813-11	METAL CHIP	220	5%	1/16W

Ref. No.	Part No.	Description			Remarks	Ref. No.	Part No.	Description			Remarks
R208	1-216-864-11	METAL CHIP	0	5%	1/16W	R300	1-216-833-11	METAL CHIP	10K	5%	1/16W
R209	1-216-864-11	METAL CHIP	0	5%	1/16W	R301	1-216-845-11	METAL CHIP	100K	5%	1/16W
R210	1-216-864-11	METAL CHIP	0	5%	1/16W	R302	1-216-845-11	METAL CHIP	100K	5%	1/16W
R211	1-216-864-11	METAL CHIP	0	5%	1/16W	R303	1-216-833-11	METAL CHIP	10K	5%	1/16W
R212	1-216-833-11	METAL CHIP	10K	5%	1/16W	R304	1-216-833-11	METAL CHIP	10K	5%	1/16W
R213	1-216-817-11	METAL CHIP	470	5%	1/16W	R305	1-216-864-11	METAL CHIP	0	5%	1/16W
R215	1-216-864-11	METAL CHIP	0	5%	1/16W	R307	1-216-864-11	METAL CHIP	0	5%	1/16W
R216	1-216-875-11	METAL CHIP	15K	0.5%	1/10W	R320	1-216-864-11	METAL CHIP	0	5%	1/16W
R217	1-216-864-11	METAL CHIP	0	5%	1/16W	R321	1-216-864-11	METAL CHIP	0	5%	1/16W
R218	1-216-864-11	METAL CHIP	0	5%	1/16W	R322	1-216-864-11	METAL CHIP	0	5%	1/16W
R219	1-216-801-11	METAL CHIP	22	5%	1/16W	R323	1-216-864-11	METAL CHIP	0	5%	1/16W
R220	1-216-801-11	METAL CHIP	22	5%	1/16W	R324	1-216-864-11	METAL CHIP	0	5%	1/16W
R221	1-216-801-11	METAL CHIP	22	5%	1/16W	R325	1-216-864-11	METAL CHIP	0	5%	1/16W
R222	1-216-801-11	METAL CHIP	22	5%	1/16W	R350	1-216-821-11	METAL CHIP	1K	5%	1/16W
R223	1-216-864-11	METAL CHIP	0	5%	1/16W	R351	1-216-821-11	METAL CHIP	1K	5%	1/16W
R224	1-216-864-11	METAL CHIP	0	5%	1/16W	R353	1-216-833-11	METAL CHIP	10K	5%	1/16W
R225	1-216-833-11	METAL CHIP	10K	5%	1/16W	R354	1-216-833-11	METAL CHIP	10K	5%	1/16W
R226	1-216-864-11	METAL CHIP	0	5%	1/16W	R356	1-216-789-11	METAL CHIP	2.2	5%	1/16W
R227	1-216-797-11	METAL CHIP	10	5%	1/16W	R369	1-216-789-11	METAL CHIP	2.2	5%	1/16W
R228	1-216-833-11	METAL CHIP	10K	5%	1/16W	R370	1-216-789-11	METAL CHIP	2.2	5%	1/16W
R229	1-216-864-11	METAL CHIP	0	5%	1/16W	R502	1-216-809-11	METAL CHIP	100	5%	1/16W
R230	1-216-817-11	METAL CHIP	470	5%	1/16W	R503	1-216-809-11	METAL CHIP	100	5%	1/16W
R231	1-216-809-11	METAL CHIP	100	5%	1/16W	R504	1-216-864-11	METAL CHIP	0	5%	1/16W
R232	1-216-864-11	METAL CHIP	0	5%	1/16W	R505	1-216-841-11	METAL CHIP	47K	5%	1/16W
R239	1-216-789-11	METAL CHIP	2.2	5%	1/16W	R506	1-216-864-11	METAL CHIP	0	5%	1/16W
R240	1-216-789-11	METAL CHIP	2.2	5%	1/16W	R507	1-216-864-11	METAL CHIP	0	5%	1/16W
R241	1-216-809-11	METAL CHIP	100	5%	1/16W	R508	1-216-864-11	METAL CHIP	0	5%	1/16W
R242	1-218-867-11	METAL CHIP	6.8K	0.5%	1/10W	R509	1-216-833-11	METAL CHIP	10K	5%	1/16W
R243	1-218-867-11	METAL CHIP	6.8K	0.5%	1/10W	R511	1-216-864-11	METAL CHIP	0	5%	1/16W
R244	1-216-864-11	METAL CHIP	0	5%	1/16W	R513	1-216-864-11	METAL CHIP	0	5%	1/16W
R245	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	R515	1-216-864-11	METAL CHIP	0	5%	1/16W
R246	1-216-833-11	METAL CHIP	10K	5%	1/16W	R516	1-216-864-11	METAL CHIP	0	5%	1/16W
R248	1-218-831-11	METAL CHIP	220	0.5%	1/10W	R517	1-216-864-11	METAL CHIP	0	5%	1/16W
R250	1-218-871-11	METAL CHIP	10K	0.5%	1/10W	R518	1-216-864-11	METAL CHIP	0	5%	1/16W
R251	1-218-879-11	METAL CHIP	22K	0.5%	1/10W	R519	1-216-864-11	METAL CHIP	0	5%	1/16W
R253	1-216-864-11	METAL CHIP	0	5%	1/16W	R520	1-216-833-11	METAL CHIP	10K	5%	1/16W
R254	1-216-857-11	METAL CHIP	1M	5%	1/16W	R522	1-216-845-11	METAL CHIP	100K	5%	1/16W
R258	1-216-833-11	METAL CHIP	10K	5%	1/16W	R523	1-216-864-11	METAL CHIP	0	5%	1/16W
R260	1-216-833-11	METAL CHIP	10K	5%	1/16W	R524	1-216-845-11	METAL CHIP	100K	5%	1/16W
R262	1-218-871-11	METAL CHIP	10K	0.5%	1/10W	R526	1-216-864-11	METAL CHIP	0	5%	1/16W
R263	1-218-871-11	METAL CHIP	10K	0.5%	1/10W	R527	1-216-864-11	METAL CHIP	0	5%	1/16W
R264	1-216-797-11	METAL CHIP	10	5%	1/16W	R528	1-216-864-11	METAL CHIP	0	5%	1/16W
R265	1-218-833-11	METAL CHIP	270	0.5%	1/10W	R529	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R267	1-218-883-11	METAL CHIP	33K	0.5%	1/10W	R530	1-216-864-11	METAL CHIP	0	5%	1/16W
R268	1-218-864-11	METAL CHIP	5.1K	0.5%	1/10W	R532	1-216-864-11	METAL CHIP	0	5%	1/16W
R269	1-216-817-11	METAL CHIP	470	5%	1/16W	R533	1-216-864-11	METAL CHIP	0	5%	1/16W
R270	1-218-847-11	METAL CHIP	1K	0.5%	1/10W	R534	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R271	1-218-865-11	METAL CHIP	5.6K	0.5%	1/10W	R535	1-216-864-11	METAL CHIP	0	5%	1/16W
R274	1-218-871-11	METAL CHIP	10K	0.5%	1/10W	R536	1-216-864-11	METAL CHIP	0	5%	1/16W
R276	1-218-843-11	METAL CHIP	680	0.5%	1/10W	R537	1-216-864-11	METAL CHIP	0	5%	1/16W
R277	1-218-865-11	METAL CHIP	5.6K	0.5%	1/10W	R538	1-216-864-11	METAL CHIP	0	5%	1/16W
R278	1-218-285-11	RES-CHIP	75	5%	1/10W	R539	1-216-864-11	METAL CHIP	0	5%	1/16W
R281	1-218-847-11	METAL CHIP	1K	0.5%	1/10W	R540	1-216-833-11	METAL CHIP	10K	5%	1/16W
R283	1-216-809-11	METAL CHIP	100	5%	1/16W	R542	1-216-833-11	METAL CHIP	10K	5%	1/16W
R290	1-216-833-11	METAL CHIP	10K	5%	1/16W	R543	1-216-833-11	METAL CHIP	10K	5%	1/16W
R291	1-216-811-11	METAL CHIP	150	5%	1/16W	R544	1-216-864-11	METAL CHIP	0	5%	1/16W
R292	1-216-833-11	METAL CHIP	10K	5%	1/16W	R545	1-216-864-11	METAL CHIP	0	5%	1/16W
R294	1-216-864-11	METAL CHIP	0	5%	1/16W						

CDR	CD-SW	CLAMP MOTOR	CONNECTOR	DISPLAY
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Ref. No.	Part No.	Description			Remarks	Ref. No.	Part No.	Description			Remarks	
R546	1-216-864-11	METAL CHIP	0	5%	1/16W		1-675-729-11	CLAMP MOTOR BOARD	*****			
R547	1-216-864-11	METAL CHIP	0	5%	1/16W				< CAPACITOR >			
R548	1-216-864-11	METAL CHIP	0	5%	1/16W		C701	1-162-306-11	CERAMIC	0.01uF	30.00% 16V	
R549	1-216-864-11	METAL CHIP	0	5%	1/16W		C702	1-126-964-11	ELECT	10uF	20.00% 50V	
R550	1-216-864-11	METAL CHIP	0	5%	1/16W		C706	1-162-306-11	CERAMIC	0.01uF	30.00% 16V	
R555	1-216-833-11	METAL CHIP	10K	5%	1/16W		C711	1-162-306-11	CERAMIC	0.01uF	30.00% 16V	
R556	1-216-833-11	METAL CHIP	10K	5%	1/16W							
		< COMPOSITION CIRCUIT BLOCK >							< DIODE >			
RB201	1-233-810-21	RES, NETWORK 100K (3216)					D701	8-719-983-66	DIODE	MTZJ-T-72-3.6B		
RB504	1-233-810-21	RES, NETWORK 100K (3216)							< CONNECTOR >			
RB505	1-233-810-21	RES, NETWORK 100K (3216)					* CN712	1-568-954-11	PIN, CONNECTOR 5P			
RB506	1-233-810-21	RES, NETWORK 100K (3216)							< IC >			
RB508	1-233-810-21	RES, NETWORK 100K (3216)					IC701	8-759-633-65	IC	M54641L		
RB509	1-233-810-21	RES, NETWORK 100K (3216)							< RESISTOR >			
RB510	1-233-810-21	RES, NETWORK 100K (3216)					R701	1-249-411-11	CARBON	330	5%	1/4W
RB511	1-233-810-21	RES, NETWORK 100K (3216)					R702	1-249-401-11	CARBON	47	5%	1/4W F
RB512	1-233-810-21	RES, NETWORK 100K (3216)							*****			
RB513	1-233-810-21	RES, NETWORK 100K (3216)							1-675-722-11 CONNECTOR BOARD			
RB514	1-233-810-21	RES, NETWORK 100K (3216)							*****			
RB515	1-233-810-21	RES, NETWORK 100K (3216)							< CONNECTOR >			
RB516	1-233-810-21	RES, NETWORK 100K (3216)					CN701	1-770-169-11	CONNECTOR, FFC/FPC 17P			
RB517	1-233-810-21	RES, NETWORK 100K (3216)							< TRANSISTOR >			
RB518	1-233-810-21	RES, NETWORK 100K (3216)					Q701	8-729-029-66	TRANSISTOR	RT1N141S-TP		
		< SWITCH >							< RESISTOR >			
S170	1-786-288-11	SWITCH, DETECTION (LOAD IN SW)										
S171	1-786-288-11	SWITCH, DETECTION (LOAD OUT SW)										
		< VIBRATOR >										
X201	1-795-519-11	VIBRATOR, CRYSTAL 33.8688MHz					R707	1-249-424-11	CARBON	3.9K	5%	1/4W F
X501	1-795-622-21	VIBRATOR, CERAMIC 20MHz					R708	1-249-417-11	CARBON	1K	5%	1/4W F
		*****					R709	1-249-429-11	CARBON	10K	5%	1/4W
		*****							*****			
	1-683-867-11	CD-SW BOARD							A-4727-910-A DISPLAY BOARD, COMPLETE (US,CND,MX)			
		*****							A-4727-916-A DISPLAY BOARD, COMPLETE (E)			
		*****							*****			
		< CAPACITOR >										
C720	1-164-159-11	CERAMIC	0.1uF		50V			4-949-935-41	CUSHION (FL)			
		< RESISTOR >					*	4-996-686-03	HOLDER (FL)			
		< CAPACITOR >							< CAPACITOR >			
R725	1-249-417-11	CARBON	1K	5%	1/4W F		C742	1-124-584-00	ELECT	100uF	20%	10V
R726	1-249-419-11	CARBON	1.5K	5%	1/4W F		C743	1-164-159-11	CERAMIC	0.1uF		50V
R727	1-249-421-11	CARBON	2.2K	5%	1/4W F		C750	1-164-159-11	CERAMIC	0.1uF		50V
R728	1-249-425-11	CARBON	4.7K	5%	1/4W F		C751	1-124-261-00	ELECT	10uF	20%	50V
R729	1-249-429-11	CARBON	10K	5%	1/4W		C753	1-124-261-00	ELECT	10uF	20%	50V
		< SWITCH >										
S725	1-762-875-21	SWITCH, KEYBOARD (PLAY MODE)					C760	1-124-261-00	ELECT	10uF	20%	50V
S726	1-762-875-21	SWITCH, KEYBOARD (TIME)					C761	1-162-294-31	CERAMIC	0.001uF	10%	50V
S727	1-762-875-21	SWITCH, KEYBOARD (D>)					C762	1-162-294-31	CERAMIC	0.001uF	10%	50V
S728	1-762-875-21	SWITCH, KEYBOARD (II)					C763	1-164-159-11	CERAMIC	0.1uF		50V
S729	1-762-875-21	SWITCH, KEYBOARD (■)					C764	1-124-261-00	ELECT	10uF	20%	50V

							C765	1-164-159-11	CERAMIC	0.1uF		50V
							C766	1-162-215-31	CERAMIC	47PF	5%	50V

Ref. No.	Part No.	Description			Remarks	Ref. No.	Part No.	Description			Remarks		
C767	1-164-159-11	CERAMIC			0.1uF	50V	< VARIABLE RESISTOR >						
C768	1-162-294-31	CERAMIC			0.001uF	10%	50V						
C769	1-162-294-31	CERAMIC			0.001uF	10%	50V						
C770	1-162-294-31	CERAMIC			0.001uF	10%	50V	< SWITCH >					
C780	1-164-159-11	CERAMIC			0.1uF	50V							
< CONNECTOR >													
CN700	1-779-558-21	CONNECTOR, FFC(LIF(NON-ZIF))21P											
* CN710	1-695-823-11	CONNECTOR, BOARD TO BOARD 8P											
< DIODE >													
D775	8-719-046-39	DIODE	SEL5821A-TP15 (SBM)										
< FILTER >													
FL750	1-518-789-11	INDICATOR TUBE, FLUORESCENT											
< IC >													
IC760	8-759-680-17	IC	MSM9201-04GS-K						(◀◀ AMS ▶▶ PUSH ENTER)				
IC781	8-759-827-69	IC	NJL63H400A-1 (■)										
< TRANSISTOR >													
Q761	8-729-620-05	TRANSISTOR	2SC2603TP-EF										
Q762	8-729-620-05	TRANSISTOR	2SC2603TP-EF										
Q775	8-729-900-80	TRANSISTOR	UN4211-TA										
< RESISTOR >													
R701	1-249-409-11	CARBON	220	5%	1/4W	F				1-683-868-11	HP BOARD		
R702	1-249-411-11	CARBON	330	5%	1/4W				*****				
R703	1-249-413-11	CARBON	470	5%	1/4W	F							
R704	1-249-415-11	CARBON	680	5%	1/4W	F	< CAPACITOR >						
R711	1-249-409-11	CARBON	220	5%	1/4W	F							
R712	1-249-411-11	CARBON	330	5%	1/4W								
R713	1-249-413-11	CARBON	470	5%	1/4W	F							
R714	1-249-415-11	CARBON	680	5%	1/4W	F							
R715	1-249-417-11	CARBON	1K	5%	1/4W	F	< JACK >						
R716	1-249-419-11	CARBON	1.5K	5%	1/4W	F							
R717	1-249-421-11	CARBON	2.2K	5%	1/4W	F	< COIL >						
R718	1-249-425-11	CARBON	4.7K	5%	1/4W	F							
R719	1-249-429-11	CARBON	10K	5%	1/4W								
R721	1-249-409-11	CARBON	220	5%	1/4W	F							
R722	1-249-411-11	CARBON	330	5%	1/4W	< RESISTOR >							
R723	1-249-413-11	CARBON	470	5%	1/4W	F							
R724	1-249-415-11	CARBON	680	5%	1/4W	F							
R741	1-247-807-31	CARBON	100	5%	1/4W				< VARIABLE RESISTOR >				
R742	1-249-401-11	CARBON	47	5%	1/4W	F							
R761	1-247-807-31	CARBON	100	5%	1/4W								
R762	1-247-807-31	CARBON	100	5%	1/4W								
R763	1-249-441-11	CARBON	100K	5%	1/4W				*****				
R764	1-249-441-11	CARBON	100K	5%	1/4W								
R766	1-247-843-11	CARBON	3.3K	5%	1/4W				*****				
R767	1-247-807-31	CARBON	100	5%	1/4W								
R768	1-247-807-31	CARBON	100	5%	1/4W	< SWITCH >							
R769	1-247-807-31	CARBON	100	5%	1/4W								
R770	1-247-807-31	CARBON	100	5%	1/4W								
R775	1-249-409-11	CARBON	220	5%	1/4W	F							
RV790	1-225-741-11	RES, VAR, CARBON	20K/20K				20K/20K (PHONE LEVEL)						
R776	1-247-807-31	CARBON	100	5%	1/4W				*****				
R777	1-247-807-31	CARBON	100	5%	1/4W								
R778	1-247-807-31	CARBON	100	5%	1/4W				*****				
R779	1-247-807-31	CARBON	100	5%	1/4W								
R780	1-223-673-11	RES, VAR, CARBON	10K				10K (REC LEVEL)						
R781	1-247-807-31	CARBON	100	5%	1/4W				< SWITCH >				
R782	1-247-807-31	CARBON	100	5%	1/4W								
R783	1-247-807-31	CARBON	100	5%	1/4W								
R784	1-247-807-31	CARBON	100	5%	1/4W								
R785	1-247-807-31	CARBON	100	5%	1/4W								
R786	1-247-807-31	CARBON	100	5%	1/4W								
R787	1-247-807-31	CARBON	100	5%	1/4W								
R788	1-247-807-31	CARBON	100	5%	1/4W								
R789	1-247-807-31	CARBON	100	5%	1/4W								
R790	1-247-807-31	CARBON	100	5%	1/4W								
R791	1-247-807-31	CARBON	100	5%	1/4W								
R792	1-247-807-31	CARBON	100	5%	1/4W								
R793	1-247-807-31	CARBON	100	5%	1/4W								
R794	1-247-807-31	CARBON	100	5%	1/4W								
R795	1-247-807-31	CARBON	100	5%	1/4W								
R796	1-247-807-31	CARBON	100	5%	1/4W								
R797	1-247-807-31	CARBON	100	5%	1/4W								
R798	1-247-807-31	CARBON	100	5%	1/4W								
R799	1-247-807-31	CARBON	100	5%	1/4W								
R800	1-247-807-31	CARBON	100	5%	1/4W								
R801	1-247-807-31	CARBON	100	5%	1/4W								
R802	1-247-807-31	CARBON	100	5%	1/4W								
R803	1-247-807-31	CARBON	100	5%	1/4W								
R804	1-247-807-31	CARBON	100	5%	1/4W								
R805	1-247-807-31	CARBON	100	5%	1/4W								
R806	1-247-807-31	CARBON	100	5%	1/4W								
R807	1-247-807-31	CARBON	100	5%	1/4W								
R808	1-247-807-31	CARBON	100	5%	1/4W								
R809	1-247-807-31	CARBON	100	5%	1/4W								
R810	1-247-807-31	CARBON	100	5%	1/4W								
R811	1-247-807-31	CARBON	100	5%	1/4W								
R812	1-247-807-31	CARBON	100	5%	1/4W								
R813	1-247-807-31	CARBON	100	5%	1/4W								
R814	1-247-807-31	CARBON	100	5%	1/4W								
R815	1-247-807-31	CARBON	100	5%	1/4W								
R816	1-247-807-31	CARBON	100	5%	1/4W								
R817	1-247-807-31	CARBON	100	5%	1/4W								
R818	1-247-807-31	CARBON	100	5%	1/4W								
R819	1-247-807-31	CARBON	100	5%	1/4W								
R820	1-247-807-31	CARBON	100	5%	1/4W								
R821	1-247-807-31	CARBON	100	5%	1/4W								
R822	1-247-807-31	CARBON	100	5%	1/4W								
R823	1-247-807-31	CARBON	100	5%	1/4W								
R824	1												

MAIN

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
C118	1-128-551-11	ELECT	22uF 20.00% 25V	C541	1-164-156-11	CERAMIC CHIP	0.1uF 25V
C170	1-128-551-11	ELECT	22uF 20.00% 25V	C600	1-126-963-11	ELECT	4.7uF 20.00% 50V
C176	1-128-551-11	ELECT	22uF 20.00% 25V	C611	1-164-156-11	CERAMIC CHIP	0.1uF 25V
C177	1-136-356-11	MYLAR	470PF 5.00% 50V	C621	1-164-156-11	CERAMIC CHIP	0.1uF 25V
C211	1-136-356-11	MYLAR	470PF 5.00% 50V	C630	1-216-864-11	METAL CHIP	0 5% 1/16W
C212	1-128-551-11	ELECT	22uF 20.00% 25V	C670	1-164-156-11	CERAMIC CHIP	0.1uF 25V
C213	1-128-551-11	ELECT	22uF 20.00% 25V	△ C900	1-113-920-11	CERAMIC	0.0022uF 20.00% 250V
C218	1-128-551-11	ELECT	22uF 20.00% 25V	△ C901	1-113-920-11	CERAMIC	0.0022uF 20.00% 250V
C276	1-128-551-11	ELECT	22uF 20.00% 25V	< CONNECTOR >			
C277	1-136-356-11	MYLAR	470PF 5.00% 50V	CN1	1-784-367-11	CONNECTOR, FFC/FPC 8P	
C311	1-126-933-11	ELECT	100uF 20.00% 16V	CN630	1-784-370-21	CONNECTOR, FFC/FPC 11P	
C312	1-164-156-11	CERAMIC CHIP	0.1uF 25V	* CN631	1-564-706-11	PIN, CONNECTOR (SMALL TYPE) 4P	
C316	1-126-933-11	ELECT	100uF 20.00% 16V	CN640	1-784-376-11	CONNECTOR, FFC/FPC 17P	
C317	1-164-156-11	CERAMIC CHIP	0.1uF 25V	* CN641	1-568-954-11	PIN, CONNECTOR 5P	
C361	1-126-933-11	ELECT	100uF 20.00% 16V	CN660	1-793-991-11	CONNECTOR, FFC/FPC 23P	
C362	1-164-156-11	CERAMIC CHIP	0.1uF 25V	CN671	1-778-692-11	CONNECTOR, FFC/FPC 21P	
C366	1-126-933-11	ELECT	100uF 20.00% 16V	CN690	1-506-468-11	PIN, CONNECTOR 3P	
C367	1-164-156-11	CERAMIC CHIP	0.1uF 25V	* CN780	1-695-822-11	CONNECTOR, BOARD TO BOARD 8P	
C391	1-164-156-11	CERAMIC CHIP	0.1uF 25V	CN900	1-564-321-00	PIN, CONNECTOR 2P	
C396	1-164-156-11	CERAMIC CHIP	0.1uF 25V	△ CN910	1-564-687-11	PIN, CONNECTOR 3P (E)	
C401	1-126-767-11	ELECT	1000uF 20.00% 16V	< DIODE >			
C403	1-126-767-11	ELECT	1000uF 20.00% 16V	D181	8-719-820-05	DIODE 1SS181-TE85L	
C410	1-126-939-11	ELECT	1000uF 20.00% 16V	D310	8-719-988-61	DIODE 1SS355TE-17	
C411	1-164-156-11	CERAMIC CHIP	0.1uF 25V	D311	8-719-801-78	DIODE 1SS184-TE85L	
C413	1-164-156-11	CERAMIC CHIP	0.1uF 25V	D316	8-719-820-05	DIODE 1SS181-TE85L	
C414	1-126-926-11	ELECT	1000uF 20.00% 10V	D401	8-719-200-82	DIODE 11ES2-TB5	
C420	1-126-939-11	ELECT	10000uF 20.00% 16V	D402	8-719-200-82	DIODE 11ES2-TB5	
C421	1-164-156-11	CERAMIC CHIP	0.1uF 25V	D403	8-719-200-82	DIODE 11ES2-TB5	
C423	1-164-156-11	CERAMIC CHIP	0.1uF 25V	D404	8-719-200-82	DIODE 11ES2-TB5	
C424	1-126-926-11	ELECT	1000uF 20.00% 10V	D411	8-719-200-82	DIODE 11ES2-TB5	
C431	1-128-548-11	ELECT	4700uF 20.00% 25V	D412	8-719-200-82	DIODE 11ES2-TB5	
C432	1-164-156-11	CERAMIC CHIP	0.1uF 25V	D421	8-719-200-82	DIODE 11ES2-TB5	
C433	1-164-156-11	CERAMIC CHIP	0.1uF 25V	D422	8-719-200-82	DIODE 11ES2-TB5	
C434	1-126-926-11	ELECT	1000uF 20.00% 10V	D426	1-216-295-91	SHORT CHIP 0	
C442	1-164-156-11	CERAMIC CHIP	0.1uF 25V	D431	8-719-200-82	DIODE 11ES2-TB5	
C443	1-164-156-11	CERAMIC CHIP	0.1uF 25V	D432	8-719-200-82	DIODE 11ES2-TB5	
C444	1-126-926-11	ELECT	1000uF 20.00% 10V	D433	8-719-200-82	DIODE 11ES2-TB5	
C451	1-128-548-11	ELECT	4700uF 20.00% 25V	D434	8-719-200-82	DIODE 11ES2-TB5	
C452	1-164-156-11	CERAMIC CHIP	0.1uF 25V	D451	8-719-200-82	DIODE 11ES2-TB5	
C453	1-164-156-11	CERAMIC CHIP	0.1uF 25V	D452	8-719-200-82	DIODE 11ES2-TB5	
C454	1-126-926-11	ELECT	1000uF 20.00% 10V	D453	8-719-200-82	DIODE 11ES2-TB5	
C460	1-128-576-11	ELECT	100uF 20.00% 63V	D454	8-719-200-82	DIODE 11ES2-TB5	
C463	1-164-156-11	CERAMIC CHIP	0.1uF 25V	D461	8-719-200-82	DIODE 11ES2-TB5	
C465	1-126-967-11	ELECT	47uF 20.00% 50V	D462	8-719-422-23	DIODE MA8047-TX	
C471	1-104-663-11	ELECT	33uF 20.00% 25V	D471	8-719-988-61	DIODE 1SS355TE-17	
C472	1-128-551-11	ELECT	22uF 20.00% 25V	D472	8-719-988-61	DIODE 1SS355TE-17	
C476	1-164-156-11	CERAMIC CHIP	0.1uF 25V	D473	8-719-988-61	DIODE 1SS355TE-17	
C480	1-164-156-11	CERAMIC CHIP	0.1uF 25V				
C481	1-162-974-11	CERAMIC CHIP	0.01uF 50V				
C505	1-164-156-11	CERAMIC CHIP	0.1uF 25V				
C517	1-126-933-11	ELECT	100uF 20.00% 16V				
C518	1-164-156-11	CERAMIC CHIP	0.1uF 25V				
C530	1-126-933-11	ELECT	100uF 20.00% 16V				
C531	1-164-156-11	CERAMIC CHIP	0.1uF 25V				
C534	1-164-156-11	CERAMIC CHIP	0.1uF 25V				
C535	1-126-933-11	ELECT	100uF 20.00% 16V				
C539	1-126-933-11	ELECT	100uF 20.00% 16V				

The components identified by mark △ or dotted line with mark △ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque △ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.
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Ref. No.	Part No.	Description			Remarks	Ref. No.	Part No.	Description			Remarks
< IC >											
IC1	6-701-853-01	IC	uPD70F3033AYGF-3BA			R87	1-216-864-11	METAL CHIP	0	5%	1/16W
IC100	8-759-643-31	IC	BR24C02FV-WE2			R88	1-216-864-11	METAL CHIP	0	5%	1/16W
IC310	8-759-278-58	IC	NJM4558V-TE2			R90	1-216-833-11	METAL CHIP	10K	5%	1/16W
IC370	8-759-278-58	IC	NJM4558V-TE2			R94	1-216-833-11	METAL CHIP	10K	5%	1/16W
IC390	8-759-697-21	IC	NJM4565V(TE2)			R95	1-216-833-11	METAL CHIP	10K	5%	1/16W
IC410	8-759-231-53	IC	AN7805			R107	1-216-833-11	METAL CHIP	10K	5%	1/16W
IC420	8-759-231-53	IC	AN7805			R111	1-216-839-11	METAL CHIP	33K	5%	1/16W
IC430	8-759-400-66	IC	AN7808			R112	1-216-837-11	METAL CHIP	22K	5%	1/16W
IC440	8-759-605-00	IC	AN7807			R113	1-216-849-11	METAL CHIP	220K	5%	1/16W
IC450	8-759-400-66	IC	AN7808			R115	1-216-805-11	METAL CHIP	47	5%	1/16W
IC460	8-759-633-42	IC	M5293L			R170	1-216-845-11	METAL CHIP	100K	5%	1/16W
IC476	8-759-387-77	IC	TC7WU04F-TE12L			R171	1-216-833-11	METAL CHIP	10K	5%	1/16W
IC480	8-759-598-06	IC	S-80942ANMP-DD6-T2			R172	1-216-833-11	METAL CHIP	10K	5%	1/16W
IC500	6-701-843-01	IC	CXD9692R			R176	1-216-819-11	METAL CHIP	680	5%	1/16W
IC610	6-600-000-01	IC	GP1FA512RZB (DIGITAL OPTICAL IN)			R177	1-216-845-11	METAL CHIP	100K	5%	1/16W
IC620	6-600-001-01	IC	GP1FA512TZA (DIGITAL OPTICAL OUT)			R178	1-216-815-11	METAL CHIP	330	5%	1/16W
< JACK >											
J310	1-784-429-11	JACK, PIN 4P (ANALOG IN/OUT)				R181	1-216-833-11	METAL CHIP	10K	5%	1/16W
< COIL >											
L390	1-216-295-91	SHORT CHIP	0			R191	1-216-805-11	METAL CHIP	47	5%	1/16W
L391	1-216-295-91	SHORT CHIP	0			R192	1-216-805-11	METAL CHIP	47	5%	1/16W
L539	1-216-296-11	SHORT CHIP	0			R193	1-216-864-11	METAL CHIP	0	5%	1/16W
L600	1-414-267-21	INDUCTOR	10uH			R211	1-216-839-11	METAL CHIP	33K	5%	1/16W
L636	1-216-295-91	SHORT CHIP	0			R212	1-216-837-11	METAL CHIP	22K	5%	1/16W
L665	1-216-295-91	SHORT CHIP	0			R213	1-216-849-11	METAL CHIP	220K	5%	1/16W
L667	1-469-670-21	FERRITE	0uH			R215	1-216-805-11	METAL CHIP	47	5%	1/16W
< LINE FILTER >											
△LF900	1-419-625-11	COIL, LINE FILTER				R270	1-216-845-11	METAL CHIP	100K	5%	1/16W
< TRANSISTOR >											
Q181	8-729-046-97	TRANSISTOR	2SD1938(F)-T(TX).SO			R271	1-216-833-11	METAL CHIP	10K	5%	1/16W
Q191	8-729-424-67	TRANSISTOR	UN2216-TX			R272	1-216-833-11	METAL CHIP	10K	5%	1/16W
Q281	8-729-046-97	TRANSISTOR	2SD1938(F)-T(TX).SO			R276	1-216-819-11	METAL CHIP	680	5%	1/16W
Q291	8-729-424-67	TRANSISTOR	UN2216-TX			R277	1-216-845-11	METAL CHIP	100K	5%	1/16W
Q310	8-729-922-37	TRANSISTOR	2SD2144S-TP-UVW			R278	1-216-815-11	METAL CHIP	330	5%	1/16W
Q380	8-729-015-74	TRANSISTOR	UN5111-TX			R281	1-216-833-11	METAL CHIP	10K	5%	1/16W
< RESISTOR >											
R3	1-216-833-11	METAL CHIP	10K	5%	1/16W	R291	1-216-805-11	METAL CHIP	47	5%	1/16W
R6	1-216-833-11	METAL CHIP	10K	5%	1/16W	R292	1-216-805-11	METAL CHIP	47	5%	1/16W
R12	1-216-845-11	METAL CHIP	100K	5%	1/16W	R293	1-216-864-11	METAL CHIP	0	5%	1/16W
R15	1-216-833-11	METAL CHIP	10K	5%	1/16W	R310	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R18	1-216-833-11	METAL CHIP	10K	5%	1/16W	R311	1-216-841-11	METAL CHIP	47K	5%	1/16W
R19	1-216-849-11	METAL CHIP	220K	5%	1/16W	R380	1-216-845-11	METAL CHIP	100K	5%	1/16W
R20	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	R381	1-216-847-11	METAL CHIP	150K	5%	1/16W
R21	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	R461	1-216-841-11	METAL CHIP	47K	5%	1/16W
R25	1-216-845-11	METAL CHIP	100K	5%	1/16W	R462	1-216-845-11	METAL CHIP	100K	5%	1/16W
R63	1-216-833-11	METAL CHIP	10K	5%	1/16W	R463	1-216-813-11	METAL CHIP	220	5%	1/16W
R64	1-216-833-11	METAL CHIP	10K	5%	1/16W	R464	1-216-813-11	METAL CHIP	220	5%	1/16W
R66	1-216-845-11	METAL CHIP	100K	5%	1/16W	R471	1-216-809-11	METAL CHIP	100	5%	1/16W
R72	1-216-833-11	METAL CHIP	10K	5%	1/16W	R472	1-216-817-11	METAL CHIP	470	5%	1/16W
R73	1-216-833-11	METAL CHIP	10K	5%	1/16W	R473	1-216-817-11	METAL CHIP	470	5%	1/16W
R474	1-216-837-11	METAL CHIP	22K	5%	1/16W	R475	1-216-842-11	METAL CHIP	56K	5%	1/16W
R476	1-216-851-11	METAL CHIP	330K	5%	1/16W	R477	1-216-821-11	METAL CHIP	1K	5%	1/16W
R480	1-216-841-11	METAL CHIP	47K	5%	1/16W	R478	1-216-841-11	METAL CHIP	47K	5%	1/16W
R500	1-216-864-11	METAL CHIP	0	5%	1/16W	R479	1-216-864-11	METAL CHIP	0	5%	1/16W
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RCD-W50C

MAIN	OUT SW	POWER-SW	SENSOR	SENSOR 2	VOL-SEL
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Ref. No.	Part No.	Description			Remarks	Ref. No.	Part No.	Description			Remarks		
R504	1-216-864-11	METAL CHIP	0	5%	1/16W		1-675-726-11	SENSOR BOARD	*****				
R506	1-216-809-11	METAL CHIP	100	5%	1/16W				*****				
R507	1-216-809-11	METAL CHIP	100	5%	1/16W		4-964-461-02	HOLDER (SENSOR)	*****				
R508	1-216-809-11	METAL CHIP	100	5%	1/16W				< CONNECTOR >				
R509	1-216-809-11	METAL CHIP	100	5%	1/16W				*****				
R510	1-216-809-11	METAL CHIP	100	5%	1/16W		CN708	1-506-481-11	PIN, CONNECTOR 2P	*****			
R511	1-216-809-11	METAL CHIP	100	5%	1/16W				< DIODE >				
R513	1-216-864-11	METAL CHIP	0	5%	1/10W				*****				
R514	1-216-864-11	METAL CHIP	0	5%	1/16W		D704	8-719-055-84	DIODE GL528VS1 (DISC IN DET SENSOR)	*****			
R516	1-216-864-11	METAL CHIP	0	5%	1/16W				< RESISTOR >				
R526	1-216-833-11	METAL CHIP	10K	5%	1/16W		R711	1-249-415-11	CARBON	680	5%	1/4W F	
R540	1-216-834-11	METAL CHIP	12K	5%	1/16W				*****				
R544	1-216-864-11	METAL CHIP	0	5%	1/16W				*****				
R550	1-216-864-11	METAL CHIP	0	5%	1/16W				*****				
R611	1-216-817-11	METAL CHIP	470	5%	1/16W				*****				
R636	1-216-864-11	METAL CHIP	0	5%	1/16W				*****				
R665	1-216-864-11	METAL CHIP	0	5%	1/16W				*****				
< COMPOSITION CIRCUIT BLOCK >								< TRANSISTOR >					
RB43	1-236-908-11	RES, CHIP NETWORK 10K (3216)					Q703	8-729-921-53	PHOTO TRAN	ISTOR PT483F1			
RB47	1-236-908-11	RES, CHIP NETWORK 10K (3216)							(DISC IN DET SENSOR)				
RB51	1-236-908-11	RES, CHIP NETWORK 10K (3216)							*****				
RB54	1-236-908-11	RES, CHIP NETWORK 10K (3216)							*****				
RB68	1-236-908-11	RES, CHIP NETWORK 10K (3216)							*****				
RB77	1-233-418-11	RES, CHIP NETWORK 3.3K (3216)							*****				
< RELAY >								< CONNECTOR >					
RY310	1-515-622-11	RELAY					△ CN911	1-564-321-00	PIN, CONNECTOR (3.96mm PITCH)2P (E)	*****			
< VIBRATOR >								< SWITCH >					
X38	1-760-014-11	VIBRATOR, CERAMIC 20MHz					△ S911	1-771-474-11	SWITCH, POWER (VOLTAGE CHANGE)	*****			
*****								(VOLTAGE SELECTOR) (E)					
1-675-725-11 OUT SW BOARD								*****					
*****								*****					
< CONNECTOR >								*****					
* CN709	1-568-943-11	PIN, CONNECTOR 5P					△ 5	1-783-525-21	CORD, POWER (TRACKING) (E)	*****			
< SWITCH >							△ 5	1-783-531-31	CORD, POWER (US,CND)	*****			
S701	1-771-218-11	SWITCH, MICRO (MID OUT)					65	1-823-923-11	WIRE (FLAT TYPE) (21 CORE)	*****			
S702	1-771-218-11	SWITCH, MICRO (LID)					107	1-823-925-11	WIRE (FLAT TYPE) (17 CORE)	*****			
S708	1-771-218-11	SWITCH, MICRO (OUT)					109	1-823-924-11	WIRE (FLAT TYPE) (23 CORE)	*****			
*****								*****					
1-683-869-11 POWER-SW BOARD							110	1-823-922-11	WIRE (FLAT TYPE) (11 CORE)	*****			
*****							562	1-782-817-11	WIRE (FLAT TYPE) (16 CORE)	*****			
< CAPACITOR >							△ 558	A-4735-189-A	OP ASSY (A-MAX.3)	*****			
△ C921	1-113-920-11	CERAMIC	0.0022uF	20.00%	250V		601	1-823-651-11	CABLE, FLEXIBLE FLAT (32 CORE)	*****			
< CONNECTOR >							△ 603	8-583-104-01	OPTICAL PICK-UP (KRM-220CAA)	*****			
* △CN920	1-580-230-31	PIN, CONNECTOR (PC BOARD) 2P							*****				
< SWITCH >								*****					
△ S921	1-572-267-51	SWITCH, PUSH (AC POWER)(1 KEY) (POWER)					* 609	1-452-958-11	MAGNET (CHUCKING)	*****			
*****							M201	A-4735-557-A	MOTOR ASSY (LOADING)	*****			
1-418-045-01 ENCODER, ROTARY							M701	1-763-790-11	MOTOR, DC (ELEVATOR)	*****			
1-437-623-11 TRANSFORMER, POWER (US,CND)							M702	1-763-790-11	MOTOR, DC (LOADING)	*****			
1-437-624-11 TRANSFORMER, POWER (E)							S707	1-418-045-01	ENCODER, ROTARY	*****			
*****								*****					
The components identified by mark △ or dotted line with mark △ are critical for safety.								*****					
Replace only with part number specified.								*****					
The components identified by mark △ or dotted line with mark △ are critical for safety.								*****					
Replace only with part number specified.								*****					

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Remarks</u>
ACCESSORIES			

1-477-038-11		REMOTE COMMANDER (RM-R51)	
1-558-271-11		CORD, CONNECTION	
1-776-263-51		CORD, CONNECTION (US,CND)	
4-981-643-01		COVER, BATTERY (FOR RM-R51)	
4-242-051-11		MANUAL, INSTRUCTION (ENGLISH)(US,CND,E)	
4-242-051-21		MANUAL, INSTRUCTION (FRENCH)(CND)	
4-242-051-31		MANUAL, INSTRUCTION (SPANISH)(E)	

REVISION HISTORY

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Also, clicking the version at the upper right on the revised page allows you to jump to the next revised page.